



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Jack H. Chang

SERIAL NO.: 09/611,178 CONFIRMATION NO.: 5599

FILING DATE: July 6, 2000

TITLE: APPARATUS AND METHOD FOR PBX-INTEGRATED UNIFIED  
MESSAGING SERVICES ON A SWITCHED BACKBONE

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ART UNIT: 2645

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**CERTIFICATE OF MAILING**

I hereby certify that this paper is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop: Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450, on the date printed below:

Date: 10/24/2005

Name: Beatrice Orozco

Beatrice Orozco

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**DECLARATION OF JACK H. CHANG PURSUANT TO 37 C.F.R §1.131**

Jack H. Chang, the above-identified Applicant, declares as follows:

1. That on July 6, 2000, the Applicant filed an application in the U.S. Patent and Trademark Office ("PTO") directed to "Apparatus and Method for PBX-Integrated Unified Messaging Services on a Switched Backbone," such application being identified as Serial No. 09/611,178 (the "Application").

2. That as the Applicant, he is thoroughly familiar with the Application and the circumstances surrounding its preparation for filing with the PTO.
3. That claims 1-8 and 25-84, inclusive, of the Application were rejected by the PTO examiner in an Office Action dated April 22, 2005, under 35 U.S.C. 102(e) as being allegedly anticipated by U.S. Patent No. 6,487,278 by Skladman et al., issued November 26, 2002 on an application filed on February 29, 2000.
4. That the Applicant conceived and reduced to practice the invention comprising the subject matter of said claims 1-8 and 25-84 prior to February 29, 2000, i.e., the effective date of the Skladman et al. patent.
5. That on August 2, 1999, a meeting was held at the law offices of D'Alessandro & Ritchie, in San Jose, CA for the purpose of reviewing the subject matter of the Application and commencing the preparation of a patent application directed thereto. The meeting of August 2, 1999 included myself and United Connections, Inc.'s outside patent counsel, Rey Barcelo, Esq.
6. At the meeting on August 2, 1999, the operation and use of a working prototype of United Connection's SCP (Service Communication Platform) / CCP (Corporate Communication Platform) system, i.e., the apparatus and method for PBX-Integrated unified messaging services on a switched backbone that is described and claimed in the Application, was discussed with Mr. Barcelo. The discussion included a review of

salient features and functionalities of the apparatus and method for PBX-Integrated unified messaging services on a switched backbone which is the subject matter of the Application.

7. That the following Exhibits, attached hereto, describe aspects of the apparatus (SCP/CCP) and method for PBX-Integrated unified messaging services on a switched backbone that is described and claimed in the Application:
  - A. Document created March 4, 1999, entitled "UniCONN™ Products and Services White Paper"
  - B. Document created March 22, 1999, entitled "Service Communication Platform, Release 3, Functional Requirements Specification, Revision 1.03"
  - C. Document created March 22, 1999, entitled "Service Communication Platform, Release 3.0, Telephone User Interface, Revision 1.08"
  - D. Document created August 29, 1999, describing the CCP Service Model
  - E. Document created September 3, 1999, describing the CCP Service Model
  - F. Document created October 20, 1999, entitled "UniCONN Business Plan, Revision 3"
  - G. Document presented on March 25, 2000, entitled "PBX-Integrated Unified Messaging Outsourcing"
  - H. Document created on April 21, 2000, entitled "SCP Maintenance Requirements Document"
  - I. Document created on November 11, 2000, entitled "features summary for blue-

silicon b3”

8. That Exhibit A describes United Connections, Inc.’s SCP / CCP system, its implementation and advantages associated herewith. For example, synchronization between a master message mailbox and a slave message mailbox cache is described under the caption “CCP Features” on page 26 of Exhibit A. The contents of Exhibit A have been incorporated, at least in part, into the Application.
9. That Exhibit B describes United Connections, Inc.’s SCP / CCP system, its implementation and advantages associated herewith. For example, synchronization between a master message mailbox and a slave message mailbox cache is described on page 3-10 (page 10 of section 3) of Exhibit B. The contents of Exhibit B have been incorporated, at least in part, into the Application.
10. That Exhibit C describes United Connections, Inc.’s SCP / CCP system, its implementation and advantages associated herewith. The contents of Exhibit C have been incorporated, at least in part, into the Application.
11. That Exhibit D describes United Connections, Inc.’s SCP / CCP system, its implementation and advantages associated herewith. For example, synchronization between a master message mailbox and a slave message mailbox cache is described under the caption “Message Redundancy” on page 4 of Exhibit D. The contents of



Exhibit D have been incorporated, at least in part, into the Application.

12. That Exhibit E describes United Connections, Inc.'s SCP / CCP system, its implementation and advantages associated herewith. For example, synchronization between a master message mailbox and a slave message mailbox cache is described under the caption "Message Redundancy" on page 4 of Exhibit E. The contents of Exhibit E have been incorporated, at least in part, into the Application.
13. That Exhibit F describes United Connections, Inc.'s SCP / CCP system, its implementation and advantages associated herewith. For example, synchronization between a master message mailbox and a slave message mailbox cache is described in section 2.5.1.2 ("CCP POP Services"), of Exhibit F, and under the caption "Message Redundancy" on page 2-19 of Exhibit F. The contents of Exhibit F have been incorporated, at least in part, into the Application.
14. That Exhibit G describes United Connection's SCP / CCP system, its implementation and advantages associated herewith. For example, synchronization between a master message mailbox and a slave message mailbox cache is described on pages 3, 6, and 8 of Exhibit G. The contents of Exhibit G have been incorporated, at least in part, into the Application.
15. That Exhibit H details how to build and maintain United Connection's SCP / CCP system. For example, synchronization between a master message mailbox and a slave

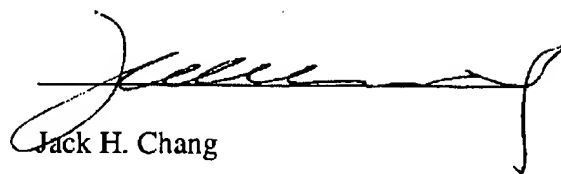
message mailbox cache is described on page 3 of Exhibit H. The contents of Exhibit H have been incorporated, at least in part, into the Application.

16. That Exhibit I summarizes features of United Connection's b3 system. For example, synchronization between a master message mailbox and a slave message mailbox cache is described on page 3 of Exhibit I. Also, activation of a message waiting light on a PBX user's voice terminal equipment when a message for the PBX user is transmitted from a master message mailbox to a slave mailbox cache is described on page 3 of Exhibit I. The contents of Exhibit I have been incorporated, at least in part, into the Application.
17. That on August 2, 1999, the date on which the invention as described and claimed in the Application was discussed at a meeting that included the Applicant's patent counsel, is prior to the effective filing date (February 29, 2000) of the Skladman et al. patent, and that the documentation attached hereto provides ample support demonstrating that the Applicant had made the invention set forth in the Application prior to the effective filing date of the Skladman et al. patent.
18. That the subject matter of Exhibits A, B, and C, which disclose and illustrate the Applicant's claimed invention and its implementation, were available at the meeting on August 2, 1999, which date is prior to the effective date of the Skladman et al. patent.

19. That on August 2, 1999, Attachments A through C were made available to Mr. Barcelo for his use in preparing the Application for filing in the PTO.
20. That the subject matter of Exhibits D, E, and F, which disclose and illustrate the Applicant's claimed invention and its implementation, were available for use in drafting the patent application prior to the effective date of the Skladman et al. patent.
21. That the documents represented by Exhibits G, H, and I were created after the effective date of the Skladman et al. patent, but disclose and illustrate the Applicant's claimed invention and its implementation which was prior to the effective date of the Skladman et al. patent.
22. That the facts set forth herein and in the Attachments hereto demonstrate that the invention set forth in the Applicant's claims 1-8 and 25-84 had been completed prior to the effective date of the Skladman et al. patent.

I hereby declare that all statements made herein of my own knowledge and are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge the willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: October 24, 2005

  
Jack H. Chang

**UniCONN™**

**Products and Services**

**White Paper**

**January 1999**



### **Important Notice Disclaimer of Warranty**

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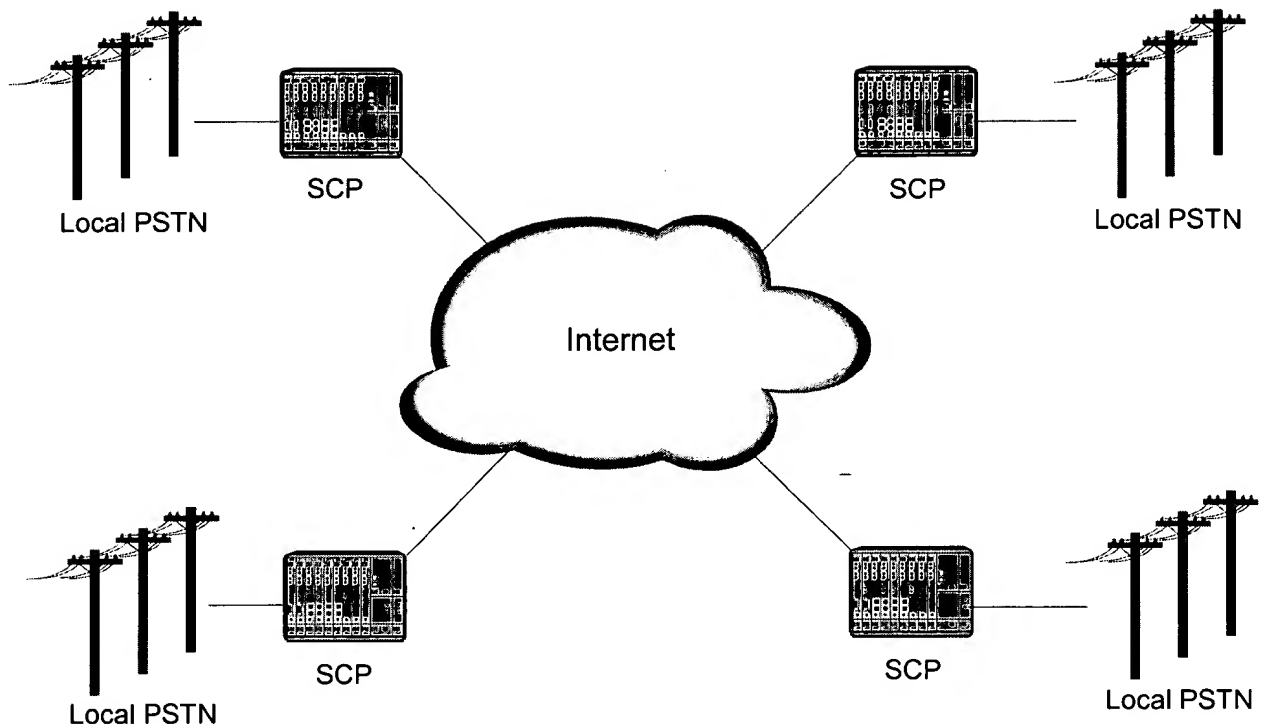
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## Overview

With the advance of the information age and the globalization of the world economy, communication has taken on an ever more important role. The advance of technology has expanded the communication media beyond the plain old telephone (POT) to include pager, facsimile, email, etc., and the concept of messaging has become an indispensable tool in day-to-day communications. Amid all these, the sheer volume and proliferate use of long distance calls has rendered cost as a significant factor in competing for customers. More importantly, the phenomenal growth and popularity of the Internet has started to reshape the landscape of the global communication network, and the boundary between voice and data communication is progressively blurred, if not completely vanquishing. As a matter of fact, "telecommunication" does not carry as much weight in "telephone" as the term originally implies.

United Connections Inc. was formed with the company mission to offer technology, products and services for the global telecommunication market, addressing the demand resulting from the aforementioned changes in the industry. The company is focused at providing leading edge real-time and semi-real-time IP based telecommunication services accessible from simple telephones or fax machines. These services are also available from a computer or a web browser for the technology savvy users.

This family of products is generically referred to as UniCONN servers. Multiple UniCONN servers or UniCONN compatible devices interconnected via a private or public IP backbone such as the Internet form the UniCONN Network. The UniCONN Network is the foundation for all the global communication services discussed in the paper.

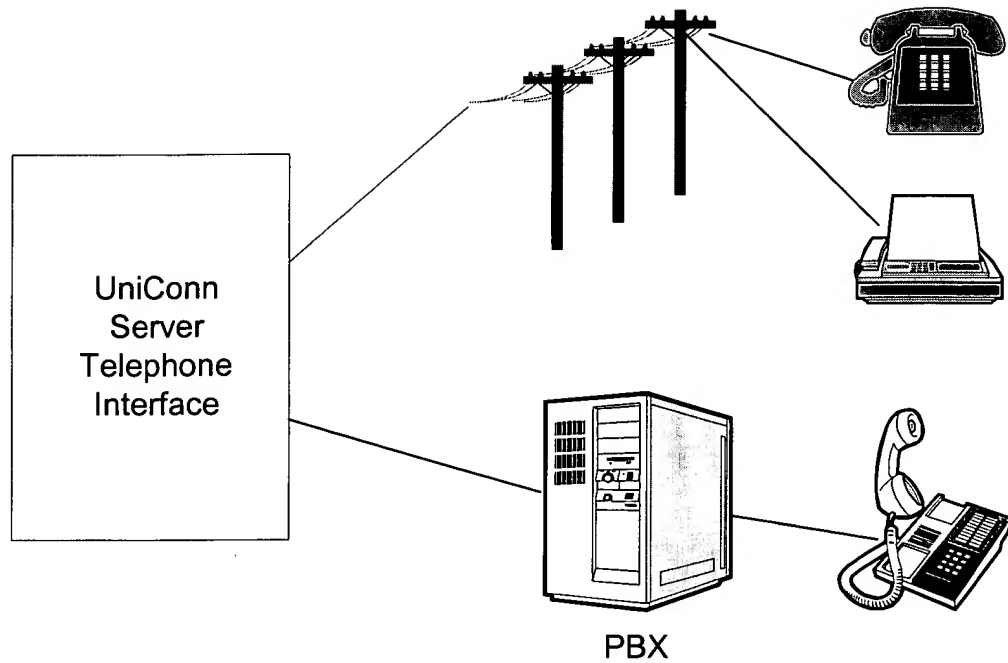


The UniCONN servers communicate among each other, using the standard TCP/IP protocol to send and receive various types of messages. The Internet serves as an open system network that spans the entire globe. On the local ends, users manipulate the various types of messages (audio, fax, email, video, etc.) with the appropriate terminals and user interface (telephone, fax machine, Internet browser, email client program, etc.)

## Telephone Interface

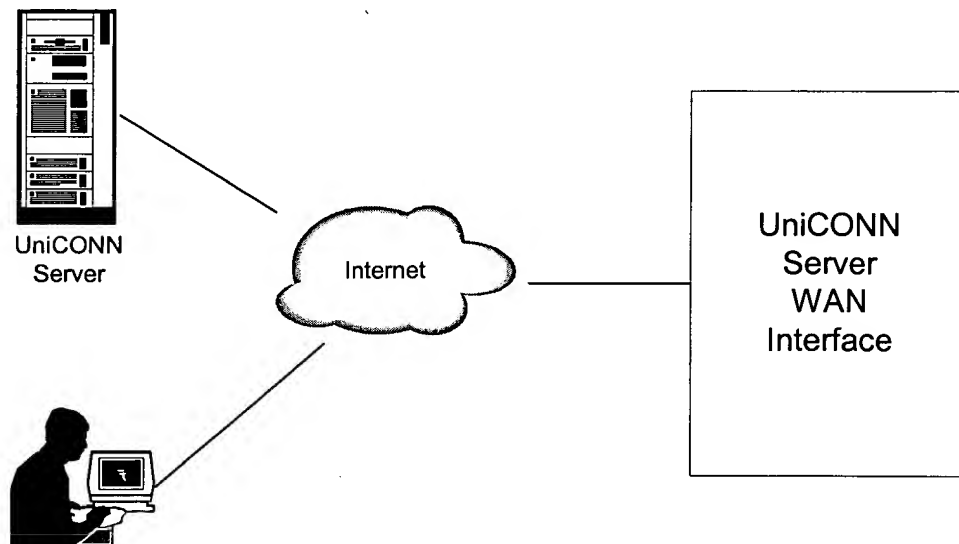
The UniCONN server connects to the telephone network, including the Public Switch Telephone Network (analog, mobile, ISDN, etc), Central Office (E1, T1, etc.), and local PBX. It provides the interface to the traditional voice network, and is responsible for answering incoming telephone calls as well as making outgoing calls, handling normal audio and facsimile communication. The user terminals in this case are typically telephones and mobile phones, fax machines, and pagers.





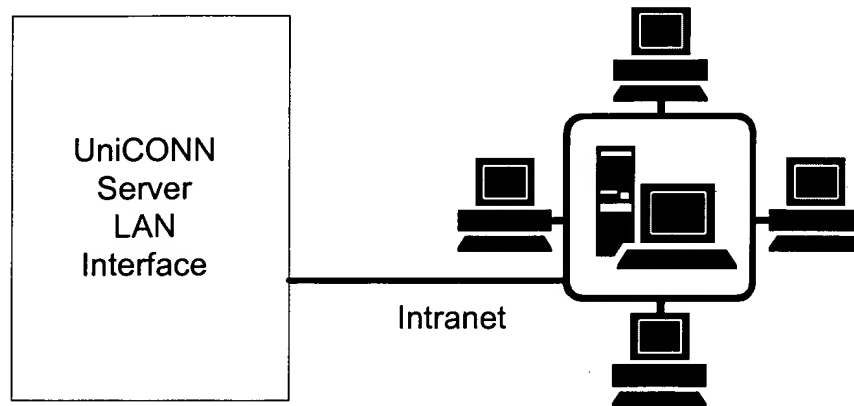
## WAN Interface

The UniCONN server connects to the Wide Area Network such as the Internet (or any IP network), using the Internet as a global network for transporting various types of messages. It also provides Web interface and email support, allowing users to retrieve the messages via the Web browser or the email client programs. The user terminals in this case are desktop workstations or laptop computers.



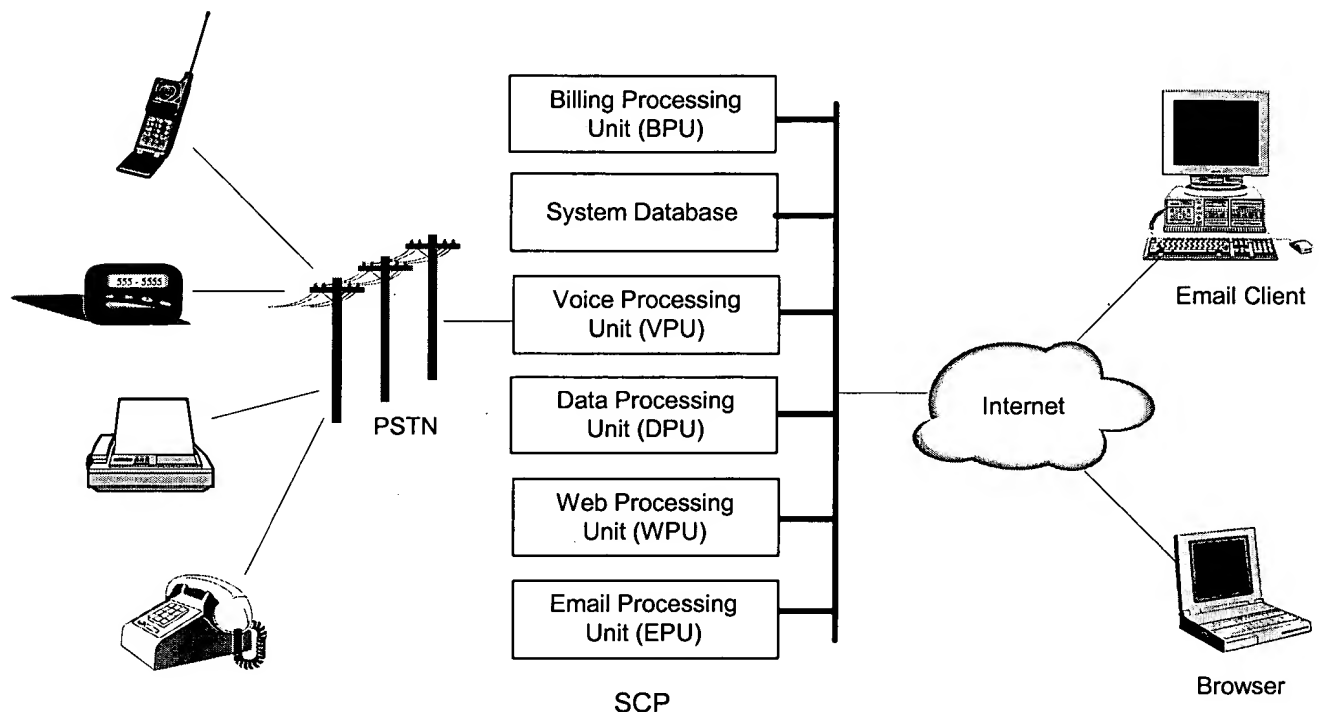
## LAN Interface

The UniCONN server connects to the Ethernet network, using the LAN as a local network for transporting messages among the various system units. The LAN Interface also enables the SCP to connect to the enterprise intranet, and communicates with other types of servers (e.g. database), and with the user workstations, in support of unified messaging capabilities and GUI user interface. The user terminals in this case are personal computers and workstations.



## System Architecture

A UniCONN server is a system through which users can communicate with each other, using the multimedia messaging services provided. A UniCONN server is implemented on the Service Communication Platform (SCP). The SCP architecture involves logically separate system units, each unit responsible for specific functions. The following diagram depicts the system architecture of the SCP.



### Data Processing Unit (DPU)

The DPU is responsible for the data communication functions and connects externally to the Internet. All the communication between SCP's, including remote message delivery and network control functions, are done through the DPU. Internally, the DPU is responsible for the mailbox management, and communicates with the other SCP system units.

### System Database

The System Database is stored in a relational database system that supports SQL access. It holds all the subscriber mailbox profiles and messages for the particular SCP. The System Database is distributed such that it can physically reside in multiple system units, providing ample room for expansion.

### Voice Processing Unit (VPU)

The VPU is responsible for the voice and fax communication functions and connects externally to the public telephone network. It supports analog, T1, E1, or ISDN interface

for users using the telephone, fax machine, or pager for retrieving and sending messages.

### **Web Processing Unit (WPU)**

The WPU supports the Web server function, and connects externally to the Internet. It provides the HTML interface for users to retrieve and send messages using the Web browser.

### **Email Processing Unit (EPU)**

The EPU supports the Email server function, and connects externally to the Internet. It provides the POP3 and SMTP interface for users to retrieve and send messages using email client programs.

### **Billing Processing Unit (BPU)**

The BPU supports the system billing and report generation function. The BPU obtains the call transaction data from the other system units, and processes the data for generating reports and billing information. The BPU is also capable of outputting the call transaction data in a defined format over the LAN, which can be used by external billing systems.

### **System Administration Program**

Independent of the number of system units, the SCP as a whole is centrally administered. The System Administration Program is a Windows (95 or above) application that runs on a PC that is connected to the system units over the same LAN. It supports all the system administration functions that are used to configure and administer the SCP, such as setting system parameters, adding user mailboxes, etc.

## **Hardware Configuration**

The SCP system units use Intel based PC or workstations as host systems, taking advantage of the rapid development and economy of scale of the PC technology. The choice of CPU speed, hard disk size, memory size, etc. will depend on the number of ports and mailboxes supported. Similarly, the choice of 10 Mbps or 100 Mbps Ethernet connection depends on the number of host systems networked together. Power supply and hard disk redundancy is a standard feature for the host systems.

The VPU uses the voice processing and network interface cards from Dialogic Corporation for supporting voice and facsimile connection to the telephone network. The maximum number of voice ports and fax ports are constrained by the number of available slots in the VPU. Generally speaking, a VPU can support up to 90 voice and fax ports by using E1 interface. Other products supporting enhanced voice processing functions, such as text-to-speech and voice recognition, can be used to provide those functions for the SCP. Similarly, products from other vendors instead of Dialogic can also be used in the VPU.

The SCP requires a dedicated Internet connection, either through a router interface or a LAN interface card. All the separate host systems use 10 Mbps or 100 Mbps Ethernet interface cards for inter-system communication and data transfer. The system also requires a PC to be used as the System Administration console

For voice messages, a compression rate of 32 Kbps ADPCM is used, which translates into approximately 15 MB for every hour of voice message storage. When voice messages are transmitted through the Internet, they are further compressed to the ITU GSM standard, so as to reduce the bandwidth requirement (about 13 Kbps). For fax, the standard T3 format is used, which amounts to about 60K bytes per page. The actual telephone port and bandwidth requirement for a SCP depends on the number of subscribers supported. As a general rule, a 64K Internet connection can sustain about 20 telephone ports, and one telephone port can support about 500 subscribers. However, these figures might vary depending on the services provided and the subscriber usage pattern.

## **Software Configuration**

Most of the system units of the SCP run on UNIX (Linux) operating system. The UNIX environment provides proven reliable environment for large scale, mission critical operations, which is ideal for the SCP applications. The VPU runs on UNIX or Windows NT, depending on the availability of the drivers for the telephone interface hardware. The billing system and the system administration functions are Windows based programs to take advantage of the Windows GUI capability.

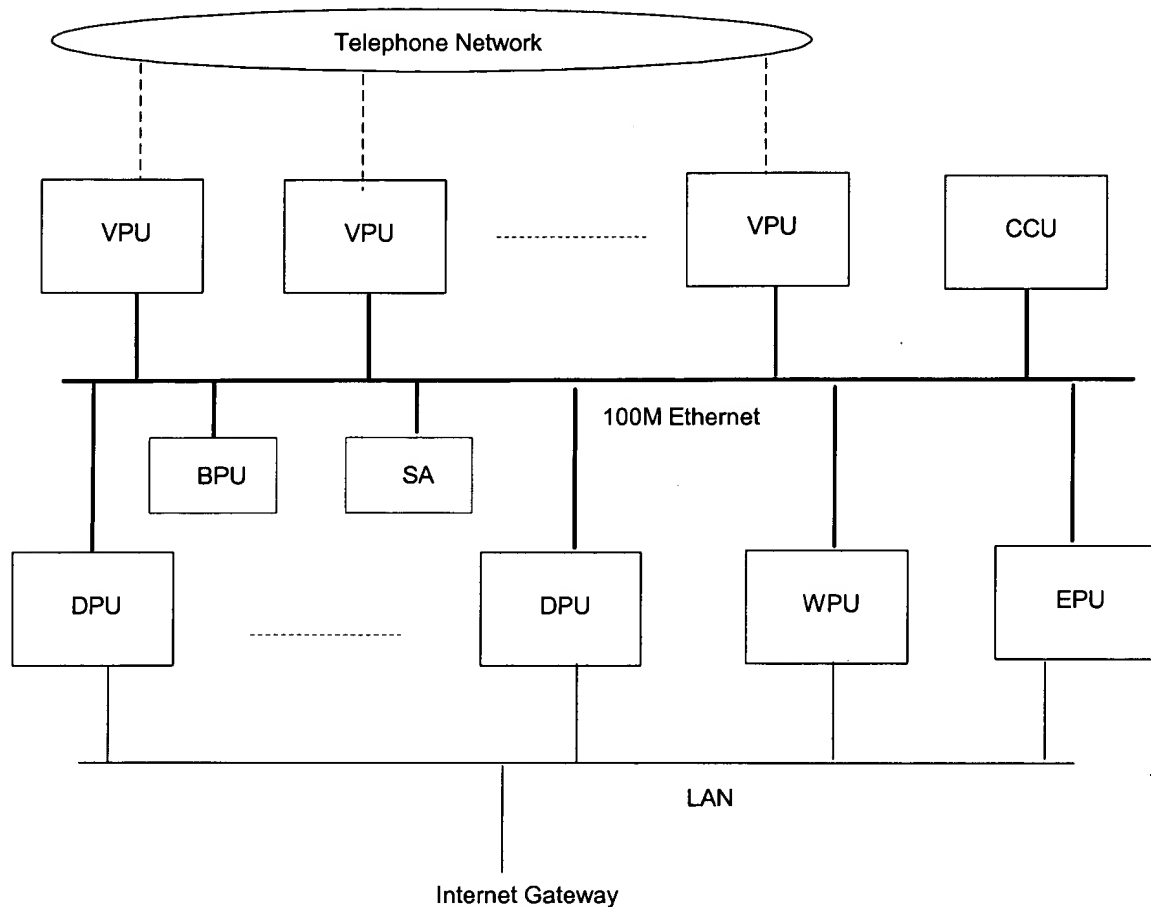
The software is designed with a distributed architecture. The inter-system communication among the various system units is based on TCP/IP, independent of whether the system units are in the same host system or as physically separated units. Similarly, all system calls are implemented with the same remote procedure call (RPC) mechanism, independent of whether the software modules belong to the same application, or are running inside different SCP systems physically separated by WAN. Most of the systems providing Internet based services rely on the email mechanism for message transport, which is subjected to the delay and file size constraint of the interim email servers. The SCP on the other hand, uses the RPC transport mechanism directly between the entities on both ends, resulting in much shorter and predictable delivery time.

The user interface modules are implemented based on PERF, a proprietary script language. This allows for fast development and easy modification for the user interface and features.

## **System Configuration**

The various system units of the SCP can be integrated within the same host system, or can be physically separated as different host systems and networked together via Ethernet connection. In addition, there can be multiple physical systems for each system unit, again networked together with Ethernet connection. The actual configuration depends on the number of mailboxes and telephone ports supported. All system units communicate among themselves using TCP/IP, thus providing a flexible and distributed system architecture. With this architecture, there is virtually no limit to the number of

mailboxes and ports that can be supported by a SCP. The actual limit depends on the bandwidth of the Ethernet connection as well as the Internet connection.



As shown in the above block diagram, the SCP interfaces directly to the telephone network through the VPU's. There is no requirement for any switching matrix. Each VPU can support up to 90 universal ports, providing voice and facsimile interface. An incoming telephone call is answered by any of the VPU ports. The VPU obtains the intended mailbox ID, either by the caller entering the ID through DTMF key input, or directly from the telephone network in the form of Called Party ID. The VPU then sends a request to the Cluster Controller Unit (CCU) to inquire about the location of the corresponding mailbox. The mailbox resides in one of the DPU's, which stores the messages and user profile of the mailbox. The CCU stores online information about the system topology of the entire SCP system, which includes the location of all the mailboxes in the system, and the configuration of the system resources. The information is constantly being updated by the various system units communicating with the CCU.

Once the VPU identifies the hosting DPU of the mailbox, it will interact with the corresponding DPU for message playback, recording, etc. When a message is being played or recorded, the message contents are transferred between the VPU and the DPU over the Ethernet in real time. The 100Mb Ethernet offers sufficient bandwidth for up to about 1,200 simultaneous connections. More connections or ports can be supported by using faster Ethernet such as Gigabit Ethernet, or multiple Ethernet networks. Similarly, network redundancy can be implemented by multiple Ethernet networks. Note that the VPU does not store any user messages or data, essentially making it a "memory-less" voice processing driver. This design reaps the benefit of the hot-swappable interface card concept of many large scale communication systems, but is implemented without the requirement of a complicated and costly proprietary architecture. In essence, any VPU can be physically shut down or removed without affecting the overall operation of the SCP.

The DPU's, on the other hand, host permanent system data, namely, the user messages and profile. The units are typically equipped with redundant power supply and disk mirroring. In addition, the entire system data of a particular DPU can be physically backed up in a different DPU. In the event that a DPU is completely gone, the CCU will automatically switch to the back-up DPU for hosting the corresponding mailboxes.

## Mode of Operation

A SCP can be operated by a Service Provider, or **Agent**, to provide the SCP communication services to public users, or **subscribers**. At the minimum, an Agent operates one single SCP covering a particular geographical area. Subscribers in that area who want to communicate with other users in a remote area, such as a foreign country, will access the Agent's SCP using local telephone calls. The Agent's SCP will transmit the corresponding messages over the Internet to another SCP that covers the destination area, which in turn will deliver the messages to the recipients, again using local telephone calls. The remote SCP might be operated by another Agent, whose subscribers can also send messages to the geographical area covered by the original Agent's SCP. The SCP's of the various Agents act as the **UniCONN Communication Centers**, and together they form a global communication network (**UniCONN Network**), covering as many geographical areas or countries as the market demands.

The same Agent might operate multiple UniCONN Communication Centers in different geographical locations. In this case, the SCP's that belong to the same Agent form a SCP Virtual Private Network (VPN). The VPN can be operated as a standalone network, allowing its users only to communicate among themselves, as in the case of a global enterprise. Alternatively, the VPN can be connected to the global UniCONN Network, allowing its users to communicate with all the other UniCONN subscribers.

The entire UniCONN network is centrally maintained from the **Master Communication Platform (MCP)**, which is operated directly by United Connections Inc. (UCI). The MCP remotely monitors all the SCP's that are operated by the various Agents, ensuring that they are running without any technical problems. The MCP is also responsible for configuring the SCP according to the individual Agents' area of coverage and rate structure. This model implements a distributed network architecture in that the UniCONN systems all operate on their own, and communicate with other UniCONN systems only as required by the application. An individual UniCONN system can be added to or removed from the UniCONN network, without affecting the operation of the other UniCONN systems. On the other hand, the MCP server represents a centralized point of control, providing the network management function so as to ensure the stability and functionality of the network.

## UniCONN Communication Center

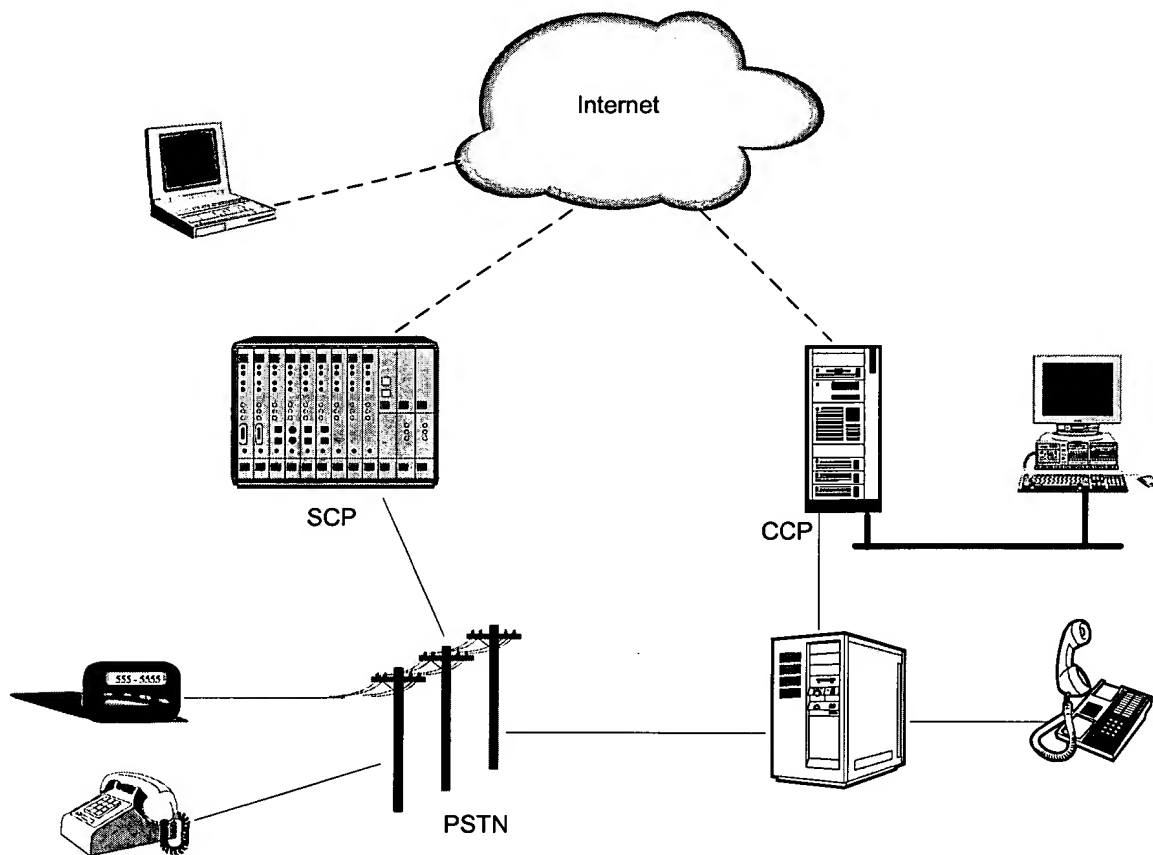
A UniCONN Communication Center is synonymous to the corresponding SCP system, or a node in the UniCONN Network. Every subscriber belongs to a particular UniCONN Communication Center, or his **host SCP**, where his UniCONN mailbox is open. A UniCONN Communication Center is referred to by its **SCP Node Name**, which is generally the country and/or city name of the corresponding geographical location. For example, the UniCONN Communication Center in Hong Kong will have "Hong Kong" as its SCP node name; while the UniCONN Communication Center in New York, USA will have "New York" as its SCP node name.

## Corporate Communication Platform



A Corporate Communication Platform (CCP) refers to a UniCONN server within a VPN configuration. A CCP is a special version of SCP, which provides communication services to users within the same organization. A CCP can be connected to the global UniCONN Network, allowing its users to communicate with the other UniCONN subscribers. This is achieved by associating the CCP with a particular SCP, generally in the same vicinity of the CCP. The CCP is hooked up to the SCP through the Internet, and logically becomes a “subscriber” of the corresponding UniCONN Communication Center, with all the CCP users grouped under the same SCP account.

A CCP can be installed as a standalone configuration, consisting of a single VPU and integrates to the telephone system or PBX of the corporation. Alternatively, it can be installed as a networked configuration, with a DPU to connect to the UniCONN Network and the corporate intranet.



## UniCONN Mailbox

Every subscriber of a UniCONN Communication Center is assigned a mailbox. All the SCP communication services are conducted through the UniCONN mailbox. From the mailbox, the subscriber can receive messages from other senders. The subscriber can also send messages to other subscribers or non-subscribers. Thus the UniCONN mailbox is not just a messaging depository, but also a point of access to the UniCONN communication network.

## UniCONN Mailbox ID

Every UniCONN Mailbox has a globally unique ID. The mailbox ID takes the same format of an international telephone number, that is:

<country code><city/area code><telephone number>

For example, a subscriber having a mailbox in the UniCONN Communication Center of Fremont, California, USA, might have mailbox ID as 1-510-7712345, while a subscriber having a mailbox in the UniCONN Communication Center of Hong Kong might have mailbox ID as 852-28052233. This design guarantees that a UniCONN mailbox ID is globally unique, and that a user will access a mailbox ID the same way as making a telephone call. The subscriber can specify a desired telephone number to be used as his mailbox ID, as long as the telephone number follows the public telephone numbering plan. For example, a subscriber might choose to use his home telephone number, while another subscriber might choose to use his mobile phone number as the mailbox ID.

## Accessing UniCONN Mailbox

A subscriber accesses his mailbox in order to retrieve messages, send messages, or change mailbox options. There are different ways of accessing a UniCONN mailbox.

### Accessing UniCONN Mailbox by Telephone

To access his mailbox by telephone, a subscriber will call into a UniCONN Communication Center and then enter his mailbox ID. He can access his mailbox from any UniCONN Communication Center. The UniCONN network supports a global accessing scheme, in which all the messages will be automatically routed from the host SCP to the SCP from which a subscriber accesses his mailbox. This is called **Roaming Mailbox Access**. This feature enables a subscriber to access his mailbox from different places of the world using local telephone calls. The subscriber enters the mailbox ID exactly the same way as dialing a telephone number. Depending on the geographical location of the UniCONN Communication Center from which the subscriber accesses his mailbox, he might or might not have to dial an international access code and country code. For example, a subscriber having a UniCONN mailbox in Fremont, California, USA, might have mailbox ID as 1-510-7712345. If he is calling directly into the UniCONN Communication Center in Fremont, he only needs to enter 7712345 as the mailbox ID. If he is calling into the UniCONN Communication Center in New York, he will enter 1-510-7712334 as the mailbox ID. If he is calling into the UniCONN Communication Center in Hong Kong, he will enter 001-1-510-7712345 as the mailbox ID, "001" being the international access code in Hong Kong. The subscriber will then be

prompted by the SCP to enter the correct password in order to gain access to his mailbox through the telephone.

### **Accessing UniCONN Mailbox by Browser**

To access his mailbox from a browser software, such as Netscape Navigator or Microsoft Internet Explorer, a subscriber will make an Internet connection to the UniCONN Web Server,

**[www.uniconn.com](http://www.uniconn.com)**

From the UniCONN home page, the subscriber then enters his mailbox ID to access his mailbox. The entire mailbox ID will be required, including country code and city/area code (if any), but no long distance access code is needed. The subscriber will be requested to enter the correct password, in which case he will be pointed to the WPU of his host SCP. The subscriber will then be able to access his mailbox through the Internet browser.

### **CCP Mailbox**

The users of a CCP normally are assigned mailboxes with their telephone extension numbers as mailbox number. If a CCP is linked with the UniCONN network, the CCP as a whole will become a "subscriber" of the corresponding UniCONN Communication Center, and will be assigned a globally unique UniCONN mailbox ID. For example, the UniCONN mailbox ID for the SCP can be the main excess telephone number of the company. A user of the CCP now has an implicit UniCONN mailbox ID which is the UniCONN mailbox ID of the CCP plus his CCP mailbox number or extension. For example, a user might have mailbox number 102 in his company CCP, which has the main telephone number as 1-510-7714567. If the CCP is linked with a UniCONN Communication Center, and has 1-510-7714567 as the UniCONN mailbox ID, the user will have an implicit UniCONN mailbox ID as 1-510-7714567-102. He can use this mailbox ID to access his CCP mailbox from any SCP, using the roaming mailbox access feature.

## **UniCONN Services**

The following describes the different services that can be implemented over the UniCONN Network. Some of these services are generic and are supported by all the UniCONN Communication Centers. Others can be customized for particular UniCONN Communication Centers so as to better service the subscribers in those areas. Most of these services are also available to the CCP users provided that the corresponding CCP's are linked to the UniCONN Network.

### **Unified Messaging**

A subscriber can use his UniCONN mailbox to receive and send messages. Different types of messages are supported, namely, voice, fax, and text messages (email).

#### **Voice Message**

A voice message is generated whenever a user records a message into the SCP. The voice message is recorded over a regular telephone, and is digitized and stored in the system. After the recording of a voice message, the user has the following options.

- Replay the message for verification
- Accept and send the message
- Erase and re-record the message
- Continue recording (appending to the current message)
- Cancel recording entirely

#### **Fax Message**

A fax message is generated whenever a user sends a fax document into the SCP. The fax is sent from a fax machine, and is digitized and stored in the system. The user can choose to record a Voice Memo, which is a voice recording that references the associating fax document. The voice memo and the fax document are part of the same fax message.

#### **Text Message**

A text message is generated whenever a user sends a text message into the SCP. The text message is sent from a computer or via email, and is stored in the system as ASCII file.

### **Sending Messages to UniCONN Mailbox**

A UniCONN mailbox can be used to receive and store messages. The sender can be any user who knows the mailbox ID of the subscriber. There are different ways of sending messages to a UniCONN mailbox.

#### **Sending Messages to UniCONN Mailbox by Telephone**

To send messages to a subscriber by telephone, a user will call into a UniCONN Communication Center and then enter the subscriber's mailbox ID. The caller can be calling to any UniCONN Communication Center. The UniCONN network supports a global accessing scheme, in which all the messages will be automatically routed from the sending SCP to the host SCP to which the subscriber belongs. This feature enables users from different places of the world to send messages to a subscriber using local telephone calls. The user enters the mailbox ID exactly the same way as dialing a telephone number. Depending on the geographical location of the UniCONN Communication Center into which the user calls, he might have to dial an international access code and country code. For example, a subscriber having a UniCONN mailbox in Fremont, California, USA, might have mailbox ID as 1-510-7712345. If the user is calling directly into the UniCONN Communication Center in Fremont, he only needs to enter 7712345 as the mailbox ID. If he is calling into the UniCONN Communication Center in New York, he will enter 1-510-7712334 as the mailbox ID. If he is calling into the UniCONN Communication Center in Hong Kong, he will enter 001-1-510-7712345 as the mailbox ID, "001" being the international access code in Hong Kong. Once the user is at the subscriber's mailbox, he can send a voice message by recording over the phone, or send a fax by starting the fax transmission, in which case he would have called from a fax machine. Either case, the message will be delivered to the subscriber's mailbox for later retrieval.

### **Sending Message to UniCONN Mailbox by Browser**

A user can send text messages to the subscriber's mailbox from a browser software, such as Netscape Navigator or Microsoft Internet Explorer. The user will make an Internet connection to the UniCONN Web Server,

**[www.uniconn.com](http://www.uniconn.com)**

From the UniCONN home page, the user then specifies the mailbox ID of the subscriber. The entire mailbox ID will be required, including country code and area code (if any), but no long distance access code is needed. The user then types in the text message, which will be delivered to the subscriber's mailbox as a text message.

### **Retrieving Messages From UniCONN Mailbox**

A subscriber can retrieve the messages received and stored in his UniCONN mailbox. Depending on the types of messages, there are different ways of retrieving messages from a UniCONN mailbox.

#### **Retrieving Messages from UniCONN Mailbox by Telephone**

A subscriber can retrieve his messages by accessing his mailbox by telephone. Once the subscriber is in his mailbox, he can listen to the voice messages from the telephone, or print out the fax or text messages to a fax machine. If the subscriber is making a telephone call from a fax machine, he can have the fax directly printed out to the same fax machine at the end of the session. This is called **One-Call-Fax**. Alternatively, he can enter the telephone number of a designated fax machine and have the SCP send the

fax to that fax machine via a separate call. This is called **Two-Call-Fax**. The subscriber can choose to have the SCP automatically send the fax to a pre-assigned fax machine. For text messages, the subscriber can listen to the message contents through text-to-speech.

### **Retrieving Message from UniCONN Mailbox by Browser**

A subscriber can retrieve his messages by accessing his mailbox from a browser software, such as Netscape Navigator or Microsoft Internet Explorer. Once the subscriber is in his mailbox, he can listen to the voice messages from his multimedia computer, or view the fax or text messages. He can also download the messages to be stored in his computer.

### **Retrieving Message from UniCONN Mailbox by Email**

A subscriber can retrieve his messages as email. The subscriber specifies the email address for the SCP to send the messages. The voice messages will be delivered to the subscriber's email address as attachment, and can be played over the subscriber's multimedia PC using standard player program. Similarly, the fax messages will be delivered to the subscriber's email address as attachment, and can be viewed or printed.

Alternatively, a subscriber can retrieve his messages from an email client software, such as Microsoft Outlook. The subscriber will configure his email client software to log in to the UniCONN Email Server of his host SCP,

**<SCP node name>.uniconn.com**

The login name will be the subscriber's complete mailbox ID, and the password will be the mailbox password. Through the email client, the subscriber can list the different types of messages in his UniCONN mailbox, retrieve the messages, and delete them. When a message is deleted, it will be actually deleted from the UniCONN mailbox. For voice and fax messages, the message contents can be played or viewed with standard player programs. This method provides better integration than just receiving the messages as email, since the subscriber can directly manage the messages in his mailbox.

## **Message Notification**

When there are new messages received in a subscriber's mailbox, it is important for the subscriber to be aware so that he can retrieve the messages in a timely manner. The subscriber can periodically check his mailbox for any new messages, or more efficiently, he can be notified by the SCP whenever there are new messages received in his mailbox.

### **Message Notification by Telephone**

A subscriber can be notified by telephone call from the SCP. The subscriber will specify the telephone number to be used for notification. This can be his work phone or mobile phone. Whenever there are new messages received in the subscriber's mailbox, the SCP will call this telephone number. The SCP can be configured to ring a specific number of times and then hang up. The subscriber can answer the call and immediately access his mailbox to retrieve the messages. Alternatively, the subscriber can use the Caller ID feature to determine that this is a message notification call from the SCP, and decides not to answer the call but to retrieve the messages at a later time.

## **Message Notification by Pager**

A subscriber can be notified by pager alert from the SCP. Whenever there are new messages received in the subscriber's mailbox, the SCP will call the subscriber's pager. The notification mechanism depends on the type of pager.

### **Numeric Display Pager**

The SCP will make a telephone call to the pager and display a numeric code. The code is specified by the subscriber to indicate that the paging alert is originated from the SCP.

### **Alphanumeric Display Pager**

This can be used in the same way as a numeric display pager. If the subscriber's paging service supports Web-to-pager interface, the SCP can use the Web interface instead of making a telephone call to the pager. Similarly, if the subscriber's paging service supports email-to-pager interface, the SCP can send an email instead of making a telephone call to the pager. In the later cases, the SCP will send header information to be displayed on the pager. The header information will include the numbers of different types of messages received.

### **Operator Assisted Pager**

The SCP will make a telephone call to the paging service, and play a recorded voice prompt to inform the operator about the subscriber's pager ID followed by a specific telephone number. The telephone number is specified by the subscriber to indicate that the paging alert is originated from the SCP.

### **Voice Pager**

The SCP will make a telephone call to the pager, and play a recorded voice prompt to inform the subscriber about the numbers of different types of messages in the mailbox.

## **Message Notification by Mobile Phone Display**

A subscriber can be notified by the display of his mobile phone. If the subscriber's mobile service supports Web-to-phone interface, the SCP can use the Web interface to notify the subscriber. Similarly, if the subscriber's mobile service supports email-to-phone interface, the SCP can send an email to notify the subscriber. In both cases, the SCP will send header information to be displayed on the phone display. The header information will include the numbers of different types of messages received.

## Message Notification by Email

A subscriber can be notified by email. The subscriber will specify the email address to be used for notification. Whenever there are new messages received in the subscriber's mailbox, the SCP will send an email to this email address. The email contents will include header information about the numbers of different types of messages in the mailbox.

## Email Integration with UniCONN Mailbox

The UniCONN mailbox can be integrated with the subscriber's current email account. It is possible that the subscriber has one or more email accounts that he uses to receive email. He can forward those email accounts to the generic email address of his UniCONN mailbox:

**<mailbox ID>@<SCP node name>.uniconn.com**

Alternatively, he can set up his UniCONN mailbox to have the SCP automatically check his email account(s) for new email on a regular basis. In both cases, the subscriber will be notified through his UniCONN mailbox whenever he has new email. The notification mechanism is the same as for unified messaging. This provides a convenient way for the subscriber to determine when to log in to his email account(s) to read his email.

In addition to being notified, the subscriber can choose to retrieve the email by accessing his mailbox via the telephone. This feature is called **Email Anytime**. The subscriber can review the email header information, which includes sender's email address and subject, and/or get the text contents of the email. The subscriber can listen to the email by text-to-speech, or have it printed out as fax. After retrieving the email, the subscriber can delete them from his email account(s).

## Pager Integration with UniCONN Mailbox

Besides using the pager for message notification, the UniCONN mailbox can be used for regular paging. When a caller calls into the subscriber's UniCONN mailbox, instead of leaving a voice message, he can choose to page the subscriber by entering his own telephone number for the subscriber to call back. The SCP will then page the subscriber, using the paging mechanism configured for his mailbox. In this case, the number displayed will be the caller's telephone number. The advantage of this over directly calling the subscriber's pager is that the same mailbox ID is used for paging, the subscriber does not need to publish a separate pager telephone number, which can change quite often whenever the subscriber switches to a different paging service. With the global access feature, the UniCONN Network can support **Global Paging**, enabling a user to page a subscriber from different places of the world using local telephone calls.



Combining with the Email Integration feature, the subscriber can have the UniCONN mailbox automatically retrieve his email and deliver to his pager display for review.

## **Sending Messages from UniCONN Mailbox**

A subscriber can send messages to other subscribers or users from his mailbox. The UniCONN mailbox serves as the point of access to the UniCONN network, through which different types of messages can be sent. Compared with a non-subscriber sending messages to another subscriber, a UniCONN subscriber has more capabilities and flexibility by using his mailbox as the access point.

## **Sending Messages to other UniCONN Subscribers**

To send messages to other subscribers by telephone, a subscriber will access his mailbox. Once in his mailbox, he can select the **Send Message** option and enter the mailbox ID of the receiving subscriber. The subscriber enters the mailbox ID exactly the same way as dialing a telephone number. After the subscriber specifies the receiving subscriber's mailbox ID, he can send a voice message by recording over the phone, or send a fax by starting the fax transmission, in which case he would have called from a fax machine. Either case, the message will be delivered into the receiving subscriber's mailbox.

## **Forwarding Messages to other UniCONN Subscribers**

A subscriber can choose to forward the messages in his mailbox to other subscribers. The subscriber can record a voice memo to accompany the forwarded message. To forward messages to other subscribers by telephone, the subscriber will access his mailbox. Once in his mailbox, he can pick any message to be forwarded, select the **Forward Message** option, and enter the mailbox ID of the receiving subscriber. The subscriber enters the mailbox ID exactly the same way as dialing a telephone number. The forwarded message will then be delivered into the receiving subscriber's mailbox. The forwarding function can also be invoked from a browser software, such as Netscape Navigator or Microsoft Internet Explorer. The subscriber will enter the entire mailbox ID to be forwarded to, including country code and area code (if any), but no long distance access code is needed.

## **Replying to other UniCONN Subscribers**

A subscriber can choose to record a voice message as a reply to another subscriber. To send a reply message to another subscriber by telephone, the subscriber will access his mailbox. Once in his mailbox, he can pick any message to be replied, select the **Reply Message** option, and then record the reply message. There is no need to enter any mailbox ID information. The reply message will be delivered into the original sending subscriber's mailbox. The original message is also sent together to help the receiving subscriber identify the matter at hand.

## **Sending Messages to non-Subscribers**

To send messages to non-subscribers by telephone, a subscriber will access his mailbox. Once in his mailbox, he can select the **Send Message** option and enter the telephone number of the recipient or his fax machine. The subscriber enters the destination telephone number exactly the same way as dialing a telephone number. After the subscriber specifies the recipient's telephone number, he can send a voice message by recording over the phone, or send a fax by starting the fax transmission, in which case he would have called from a fax machine. For a voice message, the recipient eventually will get a telephone call from the local SCP, upon which he can listen to the message over the phone. This feature is called **Voice Anywhere**. For a fax, the SCP will call the recipient's fax machine to deliver the fax. This feature is called **Fax Anywhere**.

## **Personal Telephone Number**

A SCP can support the Direct Inward Dialing (DID) service. This is a local Tel Co service that allocates blocks of actual telephone numbers to a particular telecommunication system. Whenever a DID telephone number is called, the Tel Co will route the call to the system, and pass the called number to the system. This allows the SCP to use the DID number to associate with a particular mailbox, without asking the caller to enter the mailbox ID. The availability of the DID service depends on the Tel Co service of the particular geographical location.

If a SCP supports the DID service, a subscriber's mailbox will be assigned an optional **Personal Telephone Number (PTN)** in addition to the mailbox ID. The PTN is one of the DID numbers used by the SCP, and is associated with a particular mailbox ID, or the PTN and the mailbox ID can be the same number. With this feature, callers can directly call the PTN and will immediately get into the subscriber's mailbox, without the need to first call the UniCONN Communication Center and then enter the mailbox ID. Similarly, the subscriber can directly call his PTN to access his mailbox.

The PTN provides a convenient way for using the UniCONN mailbox by telephone. There is no need to engage in a two-step calling procedure in order to access a mailbox. In fact, the PTN can be used as a normal telephone number to conduct day-to-day business. For example, a subscriber can forward his home phone or office phone to the PTN, and use the UniCONN mailbox as a sophisticated personal answering service. He can also publish the PTN as his personal fax number, and use the UniCONN mailbox as a personal fax server. Anytime an incoming fax call is received, the UniCONN mailbox will automatically receive the fax and store it in the mailbox as a fax message.

## **Virtual Mailbox**

The PTN feature is not limited to the host SCP. A subscriber can have multiple PTN associated with his mailbox, with each PTN assigned from a different SCP. A local caller

calling any of the PTN directly will be able to send voice and fax messages to the subscriber. The messages will be automatically routed to the UniCONN mailbox in the host SCP of the subscriber. This feature supports a **Virtual Mailbox** concept, with which a subscriber can establish local communication contact in different parts of the world without incurring a high cost.

## Personal Toll Free Number

Depending on the availability of toll free service by the local Tel Co, a PTN can also be a toll free number. With this feature, the subscriber can have toll free PTN in those geographical locations that he wants to publish toll free access for his callers. The callers use the local toll free PTN to send voice or fax messages to the subscriber, and the messages are automatically routed to the subscriber's mailbox over the Internet. This essentially provides a global toll free service for the subscriber with a very low cost.

## Billing

The SCP enables agents to operate public communication services, and thus billing function is needed for the agents to process service charges for their customers. The process is made more complicated by the fact that most of the services involve operations run by other agents within the UniCONN network. In general, an agent derives the revenue from two main sources.

- Revenue from providing services to its subscribers
- Revenue from supporting services originated from other agents

Alternatively, an agent incurs his cost primarily in two areas.

- Direct cost for operating the services, such as Internet cost, telephone cost, facility, etc.
- Cost paid to the UniCONN network administration and to other agents in order to provide services for its subscribers

An agent can choose to provide only some of the services supported by the SCP. An agent which operates a SCP VPN will also have different consideration for service charges among its own SCP's as compared to other agents' SCP's.

## Network Service Transaction

Network Service Transaction refers to a service transaction that goes through the UniCONN Network and requires support by other SCP's for local delivery. For example, a subscriber sending a voice message to another subscriber in another country constitutes a network service transaction, because the voice message is delivered from the originating SCP to the destination SCP over the Internet.

Every network service transaction has a service charge associated with it. The service charge is levied upon the originating SCP, and is used to pay for the operation of the

UniCONN network that is maintained by United Connections Inc. (UCI), as well as the system storage and call processing activity of the destination SCP that is summoned to complete the transaction. The originating SCP in turn can charge its subscribers a fee for the particular services.

Among the SCP's, the service charge is handled with "tokens". A token is the basic unit of service charge. Each SCP will have a token pool at its disposal. In general, every time a network service transaction is initiated, a certain number of tokens will be debited from the token pool of the originating SCP. On the other hand, a certain number of tokens will be credited to the token pool of the receiving SCP.

For each type of network service transaction, the service charge is computed based on the length of the message delivered or the transaction duration. The amount of service charge is determined based on agreement between each individual agent and UCI. The **Service Revenue Table** defines the amount of tokens receivable (to be credited) for the various services supported by the host SCP. The **Service Cost Table** defines, for each destination country or geographical area, the amount of tokens payable (to be debited) for the various services used by the host SCP. Each SCP has its own Service Revenue Table and Service Cost Table, which are maintained by the MCP and downloaded to each individual SCP.

The token pool is replenished by purchasing new tokens from UCI, or gaining token credits from supporting inbound network service transactions. The debiting and crediting functions are handled automatically by the SCP software. Adding new tokens is again carried out by the MCP and downloaded to the corresponding SCP.

## Local Service Transaction

Local Service Transaction refers to a service transaction that does not go through the UniCONN Network. For example, a subscriber sending a fax to a fax machine located in the same geographical area of the SCP constitutes a local service transaction, because the fax is delivered through the local telephone network, without going through the Internet.

Most of the local service transactions use the public telephone network, and will have a cost associated with it. The cost is levied upon the agent that hosts the SCP, who in turn can charge its subscribers for a fee for the particular services. Some local service transactions are initiated by subscribers of other SCP's, such as in Roaming Mailbox Access. In this case, the cost is compensated by the token credit derived from the corresponding network service transactions.

## Subscriber Billing

A subscriber is billed for the various network services and local services used based on the subscriber rates and the actual usage. The subscriber rates are defined by the agent in the **Subscriber Rate Table** which is used to compute the billable amount for each individual subscriber. The agent might also define different ways of charging their subscribers. The SCP provides tools for the agent to define the service rate structure for billing purposes.

### **Credit Limit**

A mailbox can be assigned a credit limit. Anytime the balance of the subscriber reaches the Credit Limit, the subscriber will be blocked from using the services, until payment is received and the condition is cleared. A Credit Limit of "0" implies no credit limit is imposed.

### **Expiration Date**

A mailbox can be assigned an expiration date. Whenever the expiration date is passed, the subscriber will be blocked from using the services, until the expiration date is reset. An expiration date of "null" implies the mailbox account never expires.

### **Subscriber Call Detail Record**

The SCP logs the CDR for all the subscribers on a daily basis. The subscriber CDR report is an ASCII file that can be read by an external billing system. The billing system can be the SCP BPU, which supports billing and report functions, or it can be the agent's own proprietary billing system. The billing system uses the CDR report for computing invoices and generating billing reports.

### **Agent Call Detail Record**

The SCP logs the CDR for all the network transactions on a daily basis. It contains reports for both the inbound and outbound traffic. The agent CDR report is an ASCII file that can be read by an external billing system. The billing system can be the SCP BPU, or it can be the agent's own proprietary billing system. The report is mainly used for auditing purposes, since the corresponding service rate and service cost would have been resolved through the automatic token scheme.

### **Subscriber Account Record**

The SCP can input subscriber account records from an external billing system. The billing system can be the SCP BPU, or it can be the agent's own proprietary billing system. The SCP uses the data to update the mailbox account status. For example, the SCP will compare the current balance with the credit limit to determine whether the subscriber has exceeded the limit and thus should be blocked from using the services. Also, the subscriber can access his mailbox to check on the outstanding balance.

### **Prepaid Charge Card**

The Prepaid Charge Card provides a mechanism for the agents to simplify and automate the billing for their subscribers. The agents can generate blocks of Prepaid Charge Code from the SCP. The Prepaid Charge Code is a randomly generated 14-digit number, which carries a face monetary value and an expiration date. The agents then issue the Prepaid Charge Cards with the Prepaid Charge Code as the card numbers, and assign them a face monetary value and an expiration date. When the subscriber purchases a Prepaid Charge Card, he can access his mailbox (from the telephone or the browser) and use the Prepaid Charge Code to prepay for his mailbox account. The SCP will automatically report the instantiation of the Prepaid Charge Card to the billing system through the CDR report, which will then update the subscriber account record accordingly.

## CCP Features

The CCP integrates with the corporate telephone system or PBX and supports voice mail and auto-attendant functions for the corporate environment. Multiple CCP's can send messages among each other using the e-mail protocol, forming a corporate VPN for inter-office messaging.

A CCP can be configured to have access to the UniCONN services. The CCP will "subscribe" to a local UniCONN Communication Center, and is subjected to its service rate schedule. All the users for the CCP will be grouped under the same subscriber account, but will have an implicit UniCONN mailbox ID equal to the CCP account ID followed by their CCP mailbox ID. Using this "UniCONN mailbox ID", the CCP user can communicate with any other UniCONN subscribers. All the messages are sent from the CCP to the associating SCP, and then to the other UniCONN subscribers in the destination SCP's. Similarly, all the messages sent to the CCP user by other UniCONN subscribers are first stored in the associating SCP, and then forwarded to the CCP. This mechanism eliminates the need for the CCP to have a permanent Internet connection, since the associating SCP functions as a gateway and "post office" for the CCP.

The CCP users can also retrieve their messages in the CCP system from anywhere in the world, using the global access feature of the UniCONN network. By using the implicit UniCONN mailbox ID, a CCP user can call in to any SCP and retrieve their messages in the CCP system. The CCP keeps a copy of all the messages in the associating SCP so that the messages can be accessed via the UniCONN network. Similarly, the CCP users can retrieve their messages through the browser interface.

## **Product Description**

United Connections Inc. offers the UniCONN product line that implements the UniCONN services. The aggregate of UniCONN systems together form the UniCONN Network. Conceptually, it is a network of UniCONN systems that communicate among themselves through the Internet, so as to support the various services. Any newly installed UniCONN system that is configured to support or access these services automatically becomes part of the network.

## **Service Communication Platform (SCP)**

The SCP is the platform for supporting the various UniCONN services. The flexible system architecture of the SCP enables it to be configured to support a large number of mailboxes and telephone ports, primarily used for providing communication services to the public users within the UniCONN Network. On the other hand, the SCP can also be tailored to operate in a VPN environment, ideal for enterprise customers. The resulting VPN can function independently as a proprietary network, or can optionally be connected to the public UniCONN Network.

The system software is also designed in a way that allows the SCP to be customized to support variations of the UniCONN services and user interface. The following are examples of the applications that can be implemented with the SCP.

### **Internet Fax**

The SCP can be configured to support Internet fax store-and-forward service. Based on the Fax Anywhere feature, the Internet Fax service enables subscribers to send fax documents that are intended for remote destinations, such as foreign countries, by calling the SCP via local telephone calls from their fax machines. The fax documents are digitized and forwarded from one SCP to another SCP via the Internet, without the long distance telephone cost as required if sent over the public switched telephone network. The receiving SCP in turn delivers the fax documents to the destination fax machines, again via local telephone calls.

For the Internet Fax service, the SCP supports a programmable auto-dialer for automating the calling process to the SCP. The subscriber can thus send a fax in exactly the same way as he normally uses a fax machine, without the need for any subscriber training.

### **Unified Messaging for Mobile Phone Operators**

The SCP can be configured to provide voice and fax messaging for mobile phone systems. The SCP will interface directly to the mobile phone system via T1 or E1, and the subscriber's mobile phone number will be used as the mailbox ID as well as the PTN. In addition to calling the subscriber, the caller now has the option to leave a voice message or send a fax to the subscriber's mailbox. By connecting to the UniCONN

Network, the subscribers can retrieve their messages outside of the mobile phone service area by using the Roaming Mailbox Access feature.

The SCP can also be configured to support Web interface and email interface for the mobile phone subscribers. Callers can log on to the WPU of the SCP to send text messages to be displayed on the subscriber's mobile phone. Similarly, callers can send email to the EPU of the SCP, which will be displayed on the subscriber's mobile phone.

## **Unified Messaging for Paging Operators**

The SCP can be configured to provide voice and fax messaging for paging systems. The SCP will interface directly to the paging system via T1 or E1, and the subscriber's pager number will be used as the mailbox ID as well as the PTN. In addition to paging the subscriber, the caller now has the option to leave a voice message or send a fax to the subscriber's mailbox. By connecting to the UniCONN Network, subscribers can be paged by callers in remote areas, such as in another country. The caller in this case calls into the local SCP to page the subscriber, without making any long distance calls.

The SCP can also be configured to support Web interface and email interface for the pager subscribers. Callers can log on to the WPU of the SCP to send text messages to be displayed on the subscriber's pager. Similarly, callers can send email to the EPU of the SCP, which will then be displayed on the subscriber's pager.

## **Corporate Communication Platform (CCP)**

The CCP is targeted at the Customer Premise Equipment (CPE) market. In this case, the customers purchase and manage their own UniCONN systems. The CCP normally has smaller configuration, and might interface to the in-house telephone systems, such as a PBX. The CCP can also interface with the enterprise network or intranet, providing tight integration with the desktop workstations. Multiple UniCONN systems can be grouped together to form a virtual private network for the particular enterprise, using the Internet as the network backbone. Alternatively, the CCP can be connected to the UniCONN Network, providing the users with access to the various UniCONN services.

### **CCP as Standalone Voice Messaging System**

The CCP can serve as a typical voice messaging system for corporations, providing voice mail and fax mail for its users. It also supports the **Auto Attendant** feature, with which external calls can be automatically answered and routed. The CCP integrates with more than 50 types of PBX and key systems, providing tight integration in support of the various telephone functions, such as supervised call transfer, message waiting indicator, etc. Other feature option includes **Fax Messaging**, which allows the user to receive fax in their mailboxes.

### **CCP with Intra-office Unified Messaging**



The CCP can be integrated with the corporate LAN to provide unified messaging features. The users will be able to manage and retrieve their messages from their PC, using the standard email client software, such as the Microsoft Outlook. The voice messages can be played over the telephone extension of the users, or the multimedia speaker systems of the PC. The CCP can also function as a fax server, receiving all the incoming fax for the corporation, printing them out to a network printer, and storing them for archiving purposes.

### **CCP with Inter-office Messaging Capability**

The CCP can be configured with the inter-office capability. This allows users in branch offices of the same corporation to communicate with each other via voice and fax messages. Each office has its own CCP, which is connected to the CCP's of the other offices through the Internet, forming a CCP VPN. The messages are delivered using the email protocol.

### **CCP with Global UniCONN Network Access**

The CCP can be connected to the UniCONN Network. The CCP becomes a "subscriber" of a local SCP, and gains access to the UniCONN Network through its host SCP. All the CCP users can now use the various UniCONN services provided by its host SCP, such as Roaming Access, browser interface, etc.

### **Third Party CPE System Interoperability**

Selected third party Customer Premise Equipment (CPE) systems can also be connected to the UniCONN Network via the Internet to extend the UniCONN services to corporate users of other telecommunication equipment. This is achieved by incorporating the SCP API in the application software.

## Market Positioning and Competitive Advantages

United Connections Inc. has positioned itself to be the leading provider of messaging based technology, products and services on the Internet. The UniCONN family of products and the unique services available under the UniCONN Network have redefined messaging based communications worldwide.

- **Field Proven**

The UniCONN products have been deployed in different countries including USA, China, Taiwan, Hong Kong, UK, Thailand, Vietnam, etc., with the UniCONN Network rapidly growing.

- **Low Entry Cost**

The UniCONN products are competitively priced to allow service providers or corporate customers to recover their investment in a short period of time.

- **Managed Network**

The UniCONN Network and its associated services are centrally managed, maintained and configured by United Connections, Inc. so that the service providers can focus on increasing customer base and revenues.

- **Uniqueness**

The UniCONN Network and its associated services offer powerful and innovative voice, fax and email based value added services to allow service providers to differentiate from others and increase revenues.

- **Minimal User Training**

The UniCONN products and services work with existing telephones or fax machines anywhere in the world. This results in increased usage and minimal user training.

- **Performance**

The "point-to-point" protocol utilized in the UniCONN products minimizes transaction delays across the network to just a few minutes, resulting in higher degree of customer acceptance and satisfaction.

- **Network Reliability**

United Connections, Inc. provides network monitoring and automatic switching to backup UniCONN servers to ensure uninterrupted services.

- **System Reliability**

The UniCONN system software is designed for mission critical applications. The UniCONN hardware is based on industrial grade components with redundancy (hard disk and power supply) for maximum reliability.

- **Security**

The UniCONN products have deployed varying degrees of security including encryption and authentication for protection of message transport over the network.

- **Failure Processing**

The UniCONN products provide comprehensive and prompt unsuccessful delivery notifications to the service providers or the sending subscribers for immediate remedial actions.

- **Settlement**

The UniCONN products automatically manage call settlement among all service providers via token credit and debit. The service providers only have to contact United Connections, Inc. for all settlement payment or credit.

- **Inbound Traffic Revenues**

The UniCONN Network and its associated services are designed to generate additional revenues for service providers hosting services for other service providers.

- **Interoperability with Other CPE Systems**

The UniCONN Network can inter-operate with other third party CPE systems such as corporate voice mail systems to extend the UniCONN services to corporate users worldwide. This results in increased subscriber base and increased service revenues for all service providers.

- **Interoperability with Internet Phones**

The UniCONN products will be enhanced in the future to provide Internet Phone capability as an added service over the worldwide UniCONN Network. This will allow subscribers to enjoy the full benefits of voice-over-IP calls as well as the corresponding messaging features.

...End of document...

# **Service Communication Platform**

**Release 3**

**Functional Requirements Specification**

**Revision 1.03**

**United Connections Inc.**

# Table of Content

<b>1.</b>	<b>INTRODUCTION .....</b>	<b>1-1</b>
1.1	REVISION HISTORY .....	1-1
1.2	RELATED DOCUMENTS .....	1-1
<b>2.</b>	<b>SYSTEM DESCRIPTION .....</b>	<b>2-1</b>
2.1	SYSTEM ARCHITECTURE .....	2-1
2.2	HARDWARE CONFIGURATION .....	2-2
2.3	MODE OF OPERATION .....	2-4
2.3.1	<i>UniCONN Communication Center .....</i>	<i>2-5</i>
2.3.2	<i>Corporate Communication Platform .....</i>	<i>2-5</i>
<b>3.</b>	<b>FUNCTIONAL DESCRIPTION .....</b>	<b>3-1</b>
3.1	UNICONN MAILBOX .....	3-1
3.1.1	<i>UniCONN Mailbox ID .....</i>	<i>3-1</i>
3.1.2	<i>Accessing UniCONN Mailbox .....</i>	<i>3-1</i>
3.1.3	<i>Accessing CCP Mailbox .....</i>	<i>3-2</i>
3.2	UNIFIED MESSAGING .....	3-3
3.2.1	<i>Sending Messages to UniCONN Mailbox .....</i>	<i>3-3</i>
3.2.1.1	By Telephone .....	3-3
3.2.1.2	By Email .....	3-4
3.2.2	<i>Retrieving Messages From UniCONN Mailbox .....</i>	<i>3-4</i>
3.2.2.1	By Telephone .....	3-4
3.2.2.2	By Browser .....	3-5
3.2.2.3	By Email Client .....	3-5
3.2.2.4	By Pager .....	3-5
3.2.2.5	By Fax Machine .....	3-5
3.2.3	<i>Message Notification .....</i>	<i>3-5</i>
3.2.4	<i>Sending Messages from UniCONN Mailbox .....</i>	<i>3-6</i>
3.2.4.1	By Telephone .....	3-7
3.2.4.2	By Browser .....	3-8
3.2.4.3	By Email Client .....	3-8
3.2.5	<i>Message Attributes .....</i>	<i>3-8</i>
3.3	TELEPHONE PORT ACCESS .....	3-9
3.4	PERSONAL TELEPHONE NUMBER .....	3-9
3.4.1	<i>Virtual Mailbox .....</i>	<i>3-10</i>
3.4.2	<i>Personal Toll Free Number .....</i>	<i>3-10</i>
3.5	WIDE AREA COMMUNICATIONS .....	3-10
3.5.1	<i>Roaming Access .....</i>	<i>3-10</i>
3.5.2	<i>Global Toll-free Messaging .....</i>	<i>3-11</i>
3.6	OUTCALLING .....	3-11
3.7	MAILBOX PROFILE .....	3-12
3.7.1	<i>Personal Profile .....</i>	<i>3-12</i>
3.7.2	<i>Service Profile .....</i>	<i>3-13</i>
3.7.3	<i>Class of Service .....</i>	<i>3-13</i>
3.8	BILLING .....	3-14
3.8.1	<i>Network Service Transaction .....</i>	<i>3-14</i>
3.8.2	<i>Local Service Transaction .....</i>	<i>3-15</i>
3.8.3	<i>Subscriber Billing .....</i>	<i>3-15</i>
3.9	OTHER FEATURES .....	3-16
3.9.1	<i>Auto-Dialer Support .....</i>	<i>3-16</i>

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**4. FUTURE ENHANCEMENTS.....4-16**

4.1 TEXT-TO-SPEECH .....4-16

# 1. Introduction

The Service Communication Platform (SCP) is a versatile platform for developing application to serve the expanding and evolving need for communication. The SCP allows integration of the telephony and the data world, providing value-added services to both corporate clients as well as to public users. This document describes the functionality and feature contents of SCP Release 3. Release 3 constitutes a major deployment of the SCP product, which contains significant functionality and feature enhancement to the previous major releases. Within a major release, the various functionality and features are made available to the general public in subsequent GA (general availability) releases, namely 3.n (for example, Release 3.1 will be the first GA release of SCP Release 3). These releases also include bug fixes and minor enhancement. In the rare cases of feature customization for particular customer requirements, there will be special GA releases containing modifications targeted for these requirements, namely 3.n-XYZ, where XYZ denotes a specific customization. Refer to the corresponding product specifications and release note for each individual GA release for the exact feature contents.

## 1.1 Revision History

Date	Revision	Significant changes
12/01/98	1.01	First revision
01/20/99	1.02	Second revision.
03/22/99	1.03	Added browser and email client interface. Added general email functions. Added description for Roaming Access and Global Toll-free Messaging

## 1.2 Related Documents

Service Communication Platform Telephone User Interface.

Service Communication Platform Internet User Interface.

Service Communication Platform System Administration Console User Interface.

Service Communication Platform English System Prompt Text.

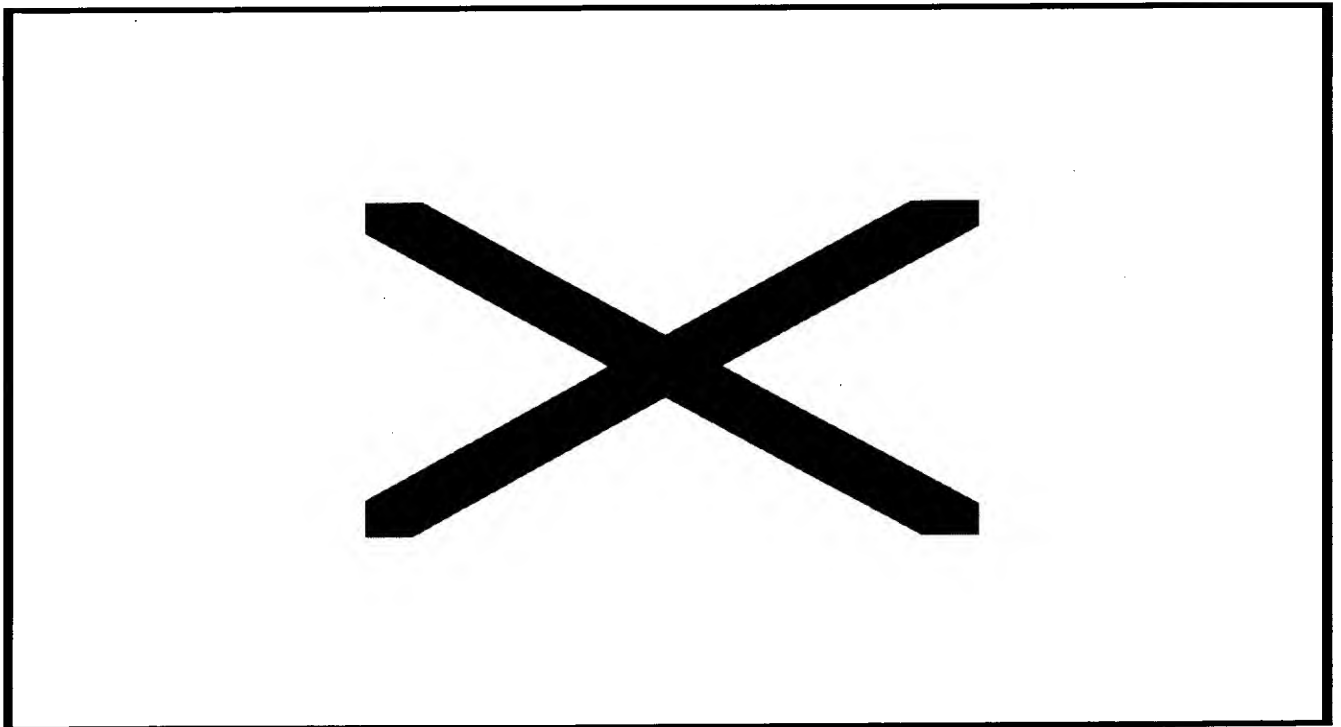
Service Communication Platform Chinese System Prompt Text.

## 2. System Description

The Service Communication Platform (SCP) is a system through which users can communicate with each other, using the multimedia messaging services provided by the SCP. Multiple SCP's are networked together, allowing the users to communicate on a WAN basis. The SCP network relies primarily on the Internet as the backbone, thus significantly reduces the communication cost, as well as achieving global accessibility as offered by the ever-expanding Internet.

### 2.1 System Architecture

The SCP architecture involves logically separate system units, each unit responsible for specific functions. The following diagram depicts the system architecture of the SCP.



#### Data Processing Unit (DPU)

The DPU is responsible for the data communication functions and connects externally to the Internet. All the communication between SCP's, including remote message delivery and network control functions, are done through the DPU. Internally, the DPU is responsible for the mailbox management, and communicates with the other SCP system units.



## System Database

The System Database is stored in a relational database system that supports SQL access. It holds all the subscriber mailbox profiles and messages for the particular SCP.

## Voice Processing Unit (VPU)

The VPU is responsible for the voice and fax communication functions and connects externally to the public telephone network. It supports analog, T1, E1, or ISDN interface for users using the telephone, fax machine, or pager for retrieving and sending messages. The VPU communicates with the DPU for storing and transmitting the voice and fax messages through the Internet. More than one VPU can be configured for a SCP system so as to support more ports.

## Web Processing Unit (WPU)

The WPU supports the Web server function, and connects externally to the Internet. It provides the HTML interface for users to retrieve and send messages using the Web browser. The WPU communicates with the DPU for retrieving and storing the messages.

## Email Processing Unit (EPU)

The EPU supports the Email server function, and connects externally to the Internet. It provides the POP3 and SMTP interface for users to retrieve and send messages using email client programs. The EPU communicates with the DPU for retrieving and storing the messages.

## Billing Processing Unit (BPU)

The BPU supports the system billing function. The BPU communicates with the DPU for generating billing reports.

The various system units of the SCP can be integrated within the same host system, or can be physically separated as different host systems and networked together via Ethernet connection. The actual configuration depends on the number of mailboxes and telephone ports supported. In either case, the various system units communicate among themselves using TCP/IP, thus providing a flexible and distributed system architecture.

# 2.2 Hardware Configuration

The basic SCP system configuration consists of the DPU, the System Database, the BPU, and the VPU, with the VPU always as a separate host system. Each VPU can support up to 60 voice ports and 60 fax ports. Additional VPU's can be added to support larger number of voice and fax ports. Alternatively, a separate WPU and/or EPU can be added to provide the Web server and Email server functions. For very large systems, the System Database and/or the BPU can also be physically separated as individual host systems.

The SCP system units use Intel based PC or workstations as host systems. The choice of CPU speed, hard disk size, memory size, etc. will depend on the number of ports and mailboxes supported. Similarly, the choice of 10 Mbs or 100 Mbs Ethernet connection depends on the number of host systems networked together.

The VPU uses the Dialogic VFX/40ESC Plus boards for tip-and-ring integration. Each VFX/40ESC Plus board supports 4 ports of voice and fax capability, and the maximum number of analog ports in a single

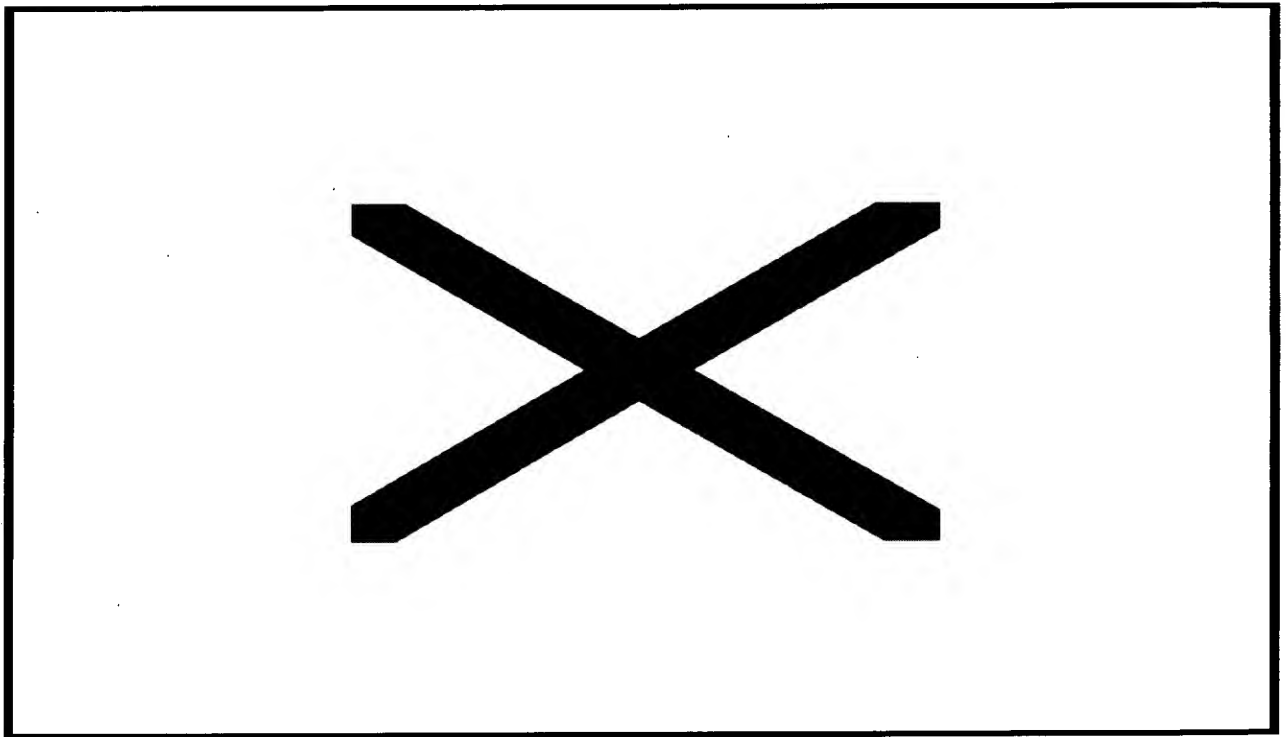
VPU is 32. For T1 or T1/ISDN integration, up to two Dialogic DTI/240SC boards or one DTI/480SC board can be used, providing a total of 48 voice channels. For E1 integration, up to two Dialogic DTI/300SC boards or one DTI/600SC board can be used, providing a total of 60 voice channels. For T1 and E1 interface, the Dialogic CP4/SC, CP6/SC, or CP12/SC fax boards are used to provide a variable number of fax channels that can be shared among the voice ports. A maximum of 60 fax channels can be configured with 5 CP12/SC boards.

The SCP requires a dedicated Internet connection, either through a router interface or a LAN interface card. All the separate host systems use 10 Mbs or 100 Mbs Ethernet interface cards for inter-system communication and data transfer. The system also requires a VGA monitor and keyboard to be used as the System Administrator console.

For voice messages, a compression rate of 32 Kbps ADPCM is used, which translates into approximately 14 MB for every hour of voice message storage. When voice messages are transmitted through the Internet, they may be further compressed to the ITU GSM or G.723.1 standard, so as to reduce the bandwidth requirement. For fax message, the standard T3 format is used, which amounts to about 50K per page.

## 2.3 Mode of Operation

An SCP is operated by a Service Provider, or **Agent**, that provides the SCP communication services to its customers, or **subscribers**. At the minimum, an Agent operates one single SCP covering a particular geographical area. Subscribers in that area who want to communicate with other users in a remote area, such as a foreign country, will access the Agent's SCP using local telephone calls. The Agent's SCP will transmit the corresponding messages over the Internet to another SCP that covers the destination area, which in turn will deliver the messages to the recipients, again using local telephone calls. The remote SCP might be operated by another Agent, whose subscribers can also send messages to the geographical area covered by the original Agent's SCP. The SCP's of the various Agents constitute the **UniCONN Communication Centers**, and together they form a global communication network (**UniCONN Network**), covering as many geographical areas or countries as the market demands.



The same Agent might operate multiple UniCONN Communication Centers in different geographical locations. In this case, the SCP's that belong to the same Agent form a SCP Virtual Private Network (**VPN**). The SCP VPN can be operated as a standalone network, allowing its users only to communicate among themselves. More likely, the VPN can be connected to the global UniCONN Network, allowing its users to communicate with all the other UniCONN subscribers. Either case, the VPN is still physically part of the UniCONN network.

The entire UniCONN network is centrally maintained from the **Master Communication Platform (MCP)**, which is operated directly by United Connections Inc. (**UCI**). The MCP remotely monitors all the SCP's that are operated by the various Agents, ensuring that they are running without any technical problems. The MCP is also responsible for configuring the SCP according to the individual Agents' area of coverage and rate structure, as well as providing centralized billing functions for resolving the payments among the various Agents for using each other's SCP to deliver messages.

## 2.3.1 UniCONN Communication Center

A UniCONN Communication Center is synonymous to the corresponding SCP system, or a node in the UniCONN Network. Every subscriber belongs to a particular UniCONN Communication Center, or his **host SCP**, where his UniCONN mailbox is open. A UniCONN Communication Center is referred to by its **SCP Node Name**, which is generally the country and/or city name of the corresponding geographical location. For example, the UniCONN Communication Center in Hong Kong will have “Hong Kong” as its SCP node name; while the UniCONN Communication Center in New York, USA will have “New York” as its SCP node name.

## 2.3.2 Corporate Communication Platform

Corporate Communication Platform (CCP) generally refers to a communication system that has the capability to interface with the UniCONN network. The CCP, installed and operated as Customer Premise Equipment (CPE), interfaces to the private branch exchange (PBX) and provides communication services to users within the same organization. By supporting the communication protocol implemented by the SCP, a CCP can have access to the UniCONN network, thus providing some of the SCP communication services to its users.

## 3. Functional Description

The SCP supports different functional capabilities, enabling it to be used for providing various communication services. An agent might choose not to provide all the available services, or can add the services later as upgrade options.

### 3.1 UniCONN Mailbox

Every subscriber of a UniCONN Communication Center is assigned a mailbox. All the SCP communication services are conducted through the UniCONN mailbox. From the mailbox, the subscriber can receive messages from other senders. The subscriber can also send messages to other subscribers or non-subscribers. Thus the UniCONN mailbox is not just a messaging depository, but also a point of access to the UniCONN communication network.

#### 3.1.1 UniCONN Mailbox ID

Every UniCONN Mailbox has a globally unique ID. The mailbox ID takes the same format of an international telephone number, that is:

<country code><area code (optional)><telephone number>

For example, a subscriber having a mailbox in the UniCONN Communication Center of Fremont, California, USA, might have mailbox ID as 1-510-7712345, while a subscriber having a mailbox in the UniCONN Communication Center of Hong Kong might have mailbox ID as 852-28052233. This design guarantees that a UniCONN mailbox ID is globally unique, and that a user will access a mailbox ID the same way as making a telephone call. The subscriber can specify a desired telephone number to be used as his mailbox ID, as long as the telephone number follows the public telephone numbering plan. For example, a subscriber might choose to use his home phone number, while another subscriber might choose to use his mobile phone number as the mailbox ID.

#### 3.1.2 Accessing UniCONN Mailbox

A subscriber accesses his mailbox in order to retrieve messages, send messages, or change mailbox options. There are different ways of accessing a UniCONN mailbox.

##### Accessing UniCONN Mailbox by Telephone

To access his mailbox by telephone, a subscriber will call into a UniCONN Communication Center and then enter his mailbox ID. He can access his mailbox from any UniCONN Communication Center. The UniCONN network supports a global accessing scheme, in which all the messages will be automatically routed from the host SCP to the SCP from which a subscriber accesses his mailbox. This is called **Roaming Mailbox Access**. This feature enables a subscriber to access his mailbox from different places of the world using local telephone calls. The subscriber enters the mailbox ID exactly the same way as dialing a telephone number. Depending on the geographical location of the UniCONN

Communication Center from which the subscriber accesses his mailbox, he might have to dial an international access code and country code. For example, a subscriber having a UniCONN mailbox in Fremont, California, USA, might have mailbox ID as 1-510-7712345. If he is calling directly into the UniCONN Communication Center in Fremont, he only needs to enter 7712345 as the mailbox ID. If he is calling into the UniCONN Communication Center in New York, he will enter 1-510-7712334 as the mailbox ID. If he is calling into the UniCONN Communication Center in Hong Kong, he will enter 001-1-510-7712345 as the mailbox ID, "001" being the international access code in Hong Kong. (See the "Service Communication Platform Telephone User Interface" for detailed description.)

### Accessing UniCONN Mailbox by Browser

To access his mailbox from a browser software, such as Netscape Navigator or Microsoft Internet Explorer, a subscriber will make an Internet connection to the UniCONN Web Server,

**www.uniconn.com**

From the UniCONN home page, the subscriber then enters his mailbox ID to access his mailbox. The entire mailbox ID will be required, including country code and area code (if any), but no long distance access code is needed. (See the "Service Communication Platform Internet User Interface" for detailed description.)

### Accessing UniCONN Mailbox by Email Client

To access his mailbox from a email client, such as Netscape Communicator or Microsoft Outlook, a subscriber will need to configure his email client to a particular host SCP. The format of the server address is like,

**<SCP\_name>.uniconn.com**

For example, a subscriber served by the Fremont SCP will use Fremont.uniconn.com. If the subscriber has email reception enabled, his email address for his mailbox will have the following format:

**<mailbox ID>@uniconn.com**

See the "Service Communication Platform Internet User Interface" for detailed description.)

## 3.1.3 Accessing CCP Mailbox

A CCP provides communication services to users within the same organization. A company voice mail system is an example of a CCP. The users of a CCP normally are assigned voice mailboxes which have their telephone extension numbers as mailbox number. If a CCP is linked with the UniCONN network, some of the SCP services will be made available to the CCP users. In order for a CCP to be linked with the UniCONN network, it has to subscribe to a local SCP or UniCONN Communication Center. The SCP will assign a **CCP Mailbox ID** to the CCP, which bears the same format as a regular subscriber mailbox ID. For example, the CCP mailbox ID can be the main excess telephone number of the company. A user of the CCP now has an implicit UniCONN mailbox ID which is the CCP mailbox ID plus his CCP mailbox number or extension. For example, a user might have mailbox number 102 in his company CCP, which has the main telephone number as 1-510-7714567. If the CCP is linked with the local UniCONN Communication Center, and has 1-510-7714567 as the CCP mailbox ID, the user will have an implicit UniCONN mailbox ID as 1-510-7714567-102. He can use this mailbox ID to access his CCP mailbox from any SCP, using the roaming mailbox access feature.

## 3.2 Unified Messaging

A subscriber can use his UniCONN mailbox to receive and send messages. Different types of messages are supported, namely, voice, fax, and text messages (email).

### Voice Message

A voice message is generated whenever a user records a message into the SCP. The voice message is recorded over a regular telephone, and is digitized and stored in the system. After the recording of a voice message, the user has the following options.

- Replay the message for verification
- Accept and send the message
- Erase and re-record the message
- Continue recording (appending to the current message)
- Cancel recording entirely

### Fax Message

A fax message is generated whenever a user sends a fax document into the SCP. The fax is sent from a fax machine, and is digitized and stored in the system. The user can choose to record a **Voice Memo**, which is a voice recording that references the associating fax document. The voice memo and the fax document are part of the same fax message.

### Email Message

An email message is generated whenever a user receives an email to his UniCONN email address.

## 3.2.1 Sending Messages to UniCONN Mailbox

A UniCONN mailbox can be used to receive and store messages. The sender can be any user who knows the mailbox ID of the subscriber. There are different ways of sending messages to a UniCONN mailbox.

### 3.2.1.1 By Telephone

To send messages to a subscriber by telephone, a user will call into a UniCONN Communication Center and then enter the subscriber's mailbox ID. He can call into any UniCONN Communication Center. The UniCONN network supports a global accessing scheme, in which all the messages will be automatically routed from the sending SCP to the host SCP to which the subscriber belongs. This feature enables a user to send messages to a subscriber from different places of the world using local telephone calls. The user enters the mailbox ID exactly the same way as dialing a telephone number. Depending on the geographical location of the UniCONN Communication Center into which the user calls, he might have to dial an international access code and country code. For example, a subscriber having a UniCONN mailbox in Fremont, California, USA, might have mailbox ID as 1-510-7712345. If the user is calling directly into the UniCONN Communication Center in Fremont, he only needs to enter 7712345 as the mailbox ID. If he is calling into the UniCONN Communication Center in New York, he will enter 1-510-7712334 as the mailbox ID. If he is calling into the UniCONN Communication Center in Hong Kong, he will enter 001-1-510-7712345 as the mailbox ID, "001"

being the international access code in Hong Kong. Once the user is at the subscriber's mailbox, he can send a voice message by recording over the phone, or send a fax by starting the fax transmission, in which case he would have called from a fax machine. Either case, the message will be delivered to the subscriber's mailbox for later retrieval. If the subscriber carries a pager, the user can also choose to page the subscriber by entering his own telephone number for the subscriber to call back. The advantage of this over directly calling the subscriber's pager is that the same mailbox ID is used for paging, the subscriber does not need to publish a separate pager telephone number, which can change quite often whenever the subscriber switches to a different pager service provider. Another advantage is that this feature essentially supports international paging, a user can page a subscriber from different places of the world using local telephone calls. (See the "Service Communication Platform Telephone User Interface" for detailed description.)

### 3.2.1.2 By Email

A user can send email to the subscriber's mailbox. The user will compose the message and send it to the subscriber's UniCONN Email Address,

`<mailbox ID>@uniconn.com`

The UniCONN email address is the generic email address for each subscriber. The entire mailbox ID will be required, including country code and area code (if any), but no long distance access code is needed. The subscriber can retrieve the text portion of the email by displaying on an alphanumeric display pager, by printing out on a fax machine, or by viewing from a browser or email client. Using his UniCONN mailbox to receive email as well, the subscriber does not need to publish a separate email address, which can change quite often whenever the subscriber switches to a different ISP. The subscriber can use the UniCONN email address as his permanent email address, and forward the received email to his other email account. (See the "Service Communication Platform Internet User Interface" for detailed description.)

## 3.2.2 Retrieving Messages From UniCONN Mailbox

A subscriber can retrieve the messages received and stored in his UniCONN mailbox. Depending on the types of messages, there are different ways of retrieving messages from a UniCONN mailbox.

### 3.2.2.1 By Telephone

A subscriber can retrieve his messages by accessing his mailbox by telephone. Once the subscriber is in his mailbox, he can listen to the voice messages from the telephone, or print out the fax or text portion of email messages to a fax machine. If the subscriber is making a telephone call from a fax machine, he can have the fax or text portion of email messages directly printed out to the same fax machine at the end of the session. This is referred to as **One-Call-Fax**. Alternatively, he can enter the telephone number of a designated fax machine and have the SCP send the fax or text messages to that particular fax machine via a separate call. This is referred as **Two-Call-Fax**. (See the "Service Communication Platform Telephone User Interface" for detailed description.)



### 3.2.2.2 By Browser

A subscriber can retrieve his messages by accessing his mailbox from a browser software, such as Netscape Navigator or Microsoft Internet Explorer. Once the subscriber is in his mailbox, he can listen to the voice messages from his multimedia computer, or view the fax or email. He can also download the messages to be stored in his computer. (See the “Service Communication Platform Internet User Interface” for detailed description.)

### 3.2.2.3 By Email Client

A subscriber can retrieve his messages from a email client software, such as Microsoft Outlook. The subscriber will configure his email client software to log in to the UniCONN Email Server of his host UniCONN Communication Center,

`<scp_name>.uniconn.com`

`<scp_name>` is the system name of the subscriber's host SCP. The login name will be the subscriber's complete mailbox ID, and the password will be the mailbox password. Through the email client, the subscriber can list the different types of messages in his UniCONN mailbox, retrieve the messages, and delete them. When a message is deleted, it will be actually deleted from the UniCONN mailbox. For voice and fax messages, the message contents will be in the form of email attachment, and can be played or viewed with standard player programs. (See the “Service Communication Platform Internet User Interface” for detailed description.)

### 3.2.2.4 By Pager

If a subscriber has an alphanumeric display pager or mobile device, he can choose to have the SCP automatically send the text messages to be displayed. (See the “Service Communication Platform Mobile Communication Device User Interface” for detailed description.)

### 3.2.2.5 By Fax Machine

A subscriber can choose to have the SCP automatically send the fax or text messages to a designated fax machine. (See the “Service Communication Platform Telephone User Interface” for detailed description.)

## 3.2.3 Message Notification

When there are new messages received in a subscriber's mailbox, it is important for the subscriber to be aware so that he can retrieve the messages in a timely manner. The subscriber can periodically check his mailbox for any new messages, or more efficiently, he can be notified by the SCP whenever there are new messages received in his mailbox.

### Message Notification by Telephone

A subscriber can be notified by telephone call from the SCP. The subscriber will specify the telephone number to be used for notification. This can be his home phone or mobile phone. Whenever there are

new messages received in the subscriber's mailbox, the SCP will call this telephone number and then hang up. The subscriber will hear the phone ring once, signaling him that there are new messages in his mailbox. The subscriber can then access his mailbox to retrieve the messages. (See the "Service Communication Platform Telephone User Interface" for detailed description.)

### **Message Notification Through Pager**

A subscriber can be notified by pager alert from the SCP. Whenever there are new messages received in the subscriber's mailbox, the SCP will call the subscriber's pager. The notification mechanism depends on the type of pager.

#### **Numeric Display Pager**

The SCP will make a telephone call to the pager and display a numeric code. The code is specified by the subscriber to indicate that the paging alert is originated from the SCP.

#### **Alphanumeric Display Pager**

This can be used in the same way as a numeric display pager. Alternatively, if the subscriber's paging service supports Web-to-pager interface, the SCP will use the Web interface instead of making a telephone call to the pager. The SCP will send header information to be displayed on the pager. The header information will include the numbers of different types of messages in the mailbox.

#### **Operator Assisted Pager**

The SCP will make a telephone call to the paging service, and play a recorded voice prompt to inform the operator about the subscriber's pager ID followed by a specific telephone number. The telephone number is specified by the subscriber to indicate that the paging alert is originated from the SCP.

#### **Voice Pager**

The SCP will make a telephone call to the pager, and play a recorded voice prompt to inform the subscriber about the numbers of different types of messages in the mailbox.

Once the subscriber is paged, he can then access his mailbox to retrieve his messages. (See the "Service Communication Platform Telephone User Interface" and the "Service Communication Platform Mobile Communication Device User Interface" for detailed description.)

### **Message Notification To Outside Email**

A subscriber can be notified by email sent by the SCP. The subscriber will specify an outside email address, not his UniCONN email address, to be used for notification. Whenever there are new messages received in the subscriber's mailbox, the SCP will send a email to this email address. The email contents will include header information about the numbers of different types of messages in the mailbox. (See the "Service Communication Platform Internet User Interface" for detailed description.)

## **3.2.4 Sending Messages from UniCONN Mailbox**

A subscriber can send messages to other subscribers or users from his mailbox. The UniCONN mailbox serves as the point of access to the UniCONN network, through which different types of messages can be sent. Compared with a normal user sending messages to another subscriber, a UniCONN subscriber has more capabilities and flexibility by using his mailbox as the access point.

### 3.2.4.1 By Telephone

#### Sending Messages to other UniCONN Subscribers

To send messages to other subscribers by telephone, a subscriber will access his mailbox. Once in his mailbox, he can select the **Send Message** option and enter the mailbox ID of the receiving subscriber. The subscriber enters the mailbox ID exactly the same way as dialing a telephone number. After the subscriber specifies the receiving subscriber's mailbox ID, he can send a voice message by recording over the phone, or send a fax by starting the fax transmission, in which case he would have called from a fax machine. Either case, the message will be delivered into the receiving subscriber's mailbox. (See the "Service Communication Platform Telephone User Interface" for detailed description.)

#### Forwarding Messages to other UniCONN Subscribers

A subscriber can choose to forward the current messages in his mailbox to other subscribers. The subscriber can record a voice memo to accompany the forwarded message. To forward messages to other subscribers by telephone, the subscriber will access his mailbox. Once in his mailbox, he can pick any message to be forwarded, select the **Forward Message** option, and enter the mailbox ID of the receiving subscriber. The subscriber enters the mailbox ID exactly the same way as dialing a telephone number. The forwarded message will then be delivered into the receiving subscriber's mailbox. The forwarding function can also be invoked from a browser software, such as Netscape Navigator or Microsoft Internet Explorer. The subscriber will enter the entire mailbox ID to be forwarded to, including country code and area code (if any), but no long distance access code is needed. In this case, the subscriber cannot record a voice memo to accompany the forwarded message. (See the "Service Communication Platform Telephone User Interface" for detailed description.)

#### Replying to other UniCONN Subscribers

A subscriber can choose to record a voice message as a reply to another subscriber. To send a reply message to another subscriber by telephone, the subscriber will access his mailbox. Once in his mailbox, he can pick any message to be replied, select the **Reply Message** option, and then record the reply message. There is no need to enter any mailbox ID information. The reply message will be delivered into the original sending subscriber's mailbox. The original message is also sent together to help the receiving subscriber identify the matter at hand. If the message replied to is itself a reply message, then the original message associated with that reply message will be discarded. (See the "Service Communication Platform Telephone User Interface" for detailed description.)

#### Sending Messages to non-Subscribers

To send messages to non-subscribers by telephone, a subscriber will access his mailbox. Once in his mailbox, he can select the **Send Message** option and enter the telephone number of the recipient or his fax machine. The subscriber enters the destination telephone number exactly the same way as dialing a telephone number. After the subscriber specifies the recipient's telephone number, he can send a voice message by recording over the phone, or send a fax by starting the fax transmission, in which case he would have called from a fax machine. For a voice message, the recipient eventually will get a telephone call from the SCP, upon which he can listen to the message over the phone. This feature is called **Voice Anywhere**. For a fax, the SCP will call the recipient's fax machine to deliver the fax. This feature is called **Fax Anywhere**. (See the "Service Communication Platform Telephone User Interface" for detailed description.)

### 3.2.4.2 By Browser

#### Sending Messages to other UniCONN Subscribers

To send messages to other subscribers by browser, a subscriber needs to log onto his mailbox through a browser. Once in his mailbox, he can select to send a message to other UniCONN subscribers. He will only need to enter the mailbox ID of the recipient. The subscriber can type any text content and attach any document. The message will be sent to the recipient as an email message. (See the "Service Communication Platform Internet User Interface" for detailed description.)

#### Forwarding Messages to other UniCONN Subscribers

A subscriber can forward the current messages to other subscribers. Once in his mailbox, he can select forward and enter the mailbox ID of the receiving subscriber. The subscriber enters the mailbox ID exactly the same way as dialing a telephone number. The forwarded message will then be delivered into the receiving subscriber's mailbox. In this case, the subscriber cannot record a voice memo to accompany the forwarded message. (See the "Service Communication Platform Internet User Interface" for detailed description.)

### 3.2.4.3 By Email Client

#### Send Message

The subscriber can compose an email to be sent to another email address. In addition, he can choose to fax the text contents of the email to another UniCONN subscriber or any fax machine, using the Fax Anywhere service of the UniCONN Network. To do so, the subscriber will specify the Destination Email Address as follows.

**<country-code [city/area code] fax number>@uniconn.com**

The format is used whether the destination is a UniCONN mailbox or not. In the Subject field, the subscriber will type in the text "Fax" to indicate that this is a fax delivery. If the fax destination is another subscriber, the fax message will go to the recipient's mailbox. If the destination is not a UniCONN mailbox and the subscriber does not enroll to Fax Anywhere service, the message will be returned.

#### Forward Message

The subscriber can forward the message as an email to another subscriber or any external email address. The corresponding voice or fax attachment is also forwarded.

## 3.2.5 Message Attributes

#### New Message

A new message is a message received that is not yet saved. The message will remain as new even though it might have been listened to by the subscriber. All new messages that stay in the subscriber's mailbox for longer than a predefined duration (configurable) will be automatically deleted.

#### Message Time Stamp (Message Envelope)

The message time stamp is the message header information that tells about the time and date when the message is originally created as well as when it is received, and the recorded name or mailbox ID of the sender, if the sender is another subscriber. When the message is played over the telephone, the message time stamp is usually not played, but the subscriber can choose the Play Message Stamp option to listen to it.

### **Saved Message**

A saved message is a received message that has been saved by the subscriber for archiving purposes. All saved messages that stay in the subscriber's mailboxes for longer than a predefined duration (configurable) will be automatically deleted.

### **Returned Message**

A returned message is a message that is returned to the subscriber's mailbox due to failure of delivery. The SCP will inform the subscriber about the reason of failure, after which the subscriber has the option to send the message to the same destination again, or send it to a different destination.

## **3.3 Telephone Port Access**

Telephone port access implies calling the SCP at a particular telephone port in order to access the system. The telephone ports of the SCP can be configured to support different types of access.

### **Local Calling**

A Local Calling port can be used by non-subscribers to send messages to subscribers within the same SCP.

### **Global Calling Port**

A Global Calling port can be used by non-subscribers to send messages to subscribers at a remote SCP.

### **Local Access Port**

A Local Access port can be used by local subscribers to log in to their mailboxes.

### **Roaming Access Port**

A Roaming Access port can be used by remote subscribers to log in to their mailboxes.

## **3.4 Personal Telephone Number**

A SCP can support the Direct Inward Dialing (DID) service. This is a local Tel Co service that allocates blocks of actual telephone numbers to a particular telecommunication system. Whenever a DID number is called by any user, the Tel Co will route the call to the system, and pass the called number to the system. This allows the SCP to use the DID number to associate with a particular mailbox, without asking the caller to enter the mailbox ID. The availability of the DID service depends on the Tel Co service of the particular geographical location.

If a SCP supports the DID service, a subscriber's mailbox will be assigned an optional **Personal Telephone Number (PTN)** in addition to the mailbox ID. The PTN is one of the DID numbers used by the SCP, and is associated with a particular mailbox ID, or the PTN and the mailbox ID can be the same number. With this feature, external callers can directly call the PTN and will immediately get into the subscriber's mailbox, without the need to first call the UniCONN Communication Center and then enter the mailbox ID. Similarly, the subscriber can directly call his PTN to access his mailbox.

The PTN provides a convenient way for using the UniCONN mailbox by telephone. There is no need to engage in a two-step calling procedure in order to access a mailbox. In fact, the PTN can be used as a normal telephone number to conduct day-to-day business. For example, a subscriber can forward his home phone or office phone to the PTN, and use the UniCONN mailbox as a sophisticated personal answering service. He can also publish the PTN as his personal fax number, and use the UniCONN mailbox as a personal fax server. Anytime an incoming fax call is received, the UniCONN mailbox will automatically receive the fax and store it in the mailbox as a fax message.

### 3.4.1 Virtual Mailbox

The PTN feature is not limited to the host SCP. A subscriber can have multiple PTN associated with his mailbox, with each PTN assigned from a different SCP. A caller calling any of the PTN directly will be able to send voice and fax messages to the subscriber. The messages will be automatically routed to the UniCONN mailbox in the host SCP of the subscriber. This feature supports a **Virtual Mailbox** concept, with which a subscriber can establish local communication contact in different parts of the world without incurring a high cost.

### 3.4.2 Personal Toll Free Number

Depending on the availability of toll free service by the local Tel Co, a PTN can also be a toll free number. With this feature, the subscriber can have toll free PTN in those geographical locations that he wants to publish toll free access for his callers. The callers use the local toll free PTN to send voice or fax messages to the subscriber, and the messages are automatically routed to the subscriber's mailbox over the Internet. This essentially provides a global toll free service for the subscriber with a very low cost.

## 3.5 Wide Area Communications

### 3.5.1 Roaming Access

When a subscriber travels outside of his home area, he can still access his mailbox by calling to a local SCP access number and is considered a Roaming Subscriber. The UniCONN network world wide is divided into zones, which may be a collection of countries, a single country, or even a part of a country. A subscriber needs to sign up to the zones at where he plans to roam. For example, a US subscriber needs to sign up to zones that cover Taiwan and Hong Kong before he can access his mailbox from there.

The roaming activities in the SCP network is triggered when the roaming subscriber first call into the local SCP of the country. The local SCP, after validating the roaming privilege of the subscriber, will try to transfer the message header information from the host SCP. It will subsequently fetch a copy of all messages from his host mailbox. The transmission may take time and the subscriber is requested to either hold or call back later. When the roaming subscriber logs in the second time, he will have all messages in

his mailbox and can manage his messages as if he is using his host mailbox. If he deletes or saves any messages, his host mailbox will be updated accordingly. Please refer to Service Communication Platform Telephone User Interface for more information.

## 3.5.2 Global Toll-free Messaging

A subscriber can select to enable users from a foreign country or zone to send him messages and pages. The sender does not need a UniCONN mailbox and does not need to pay for the service. He can simply call the local SCP access number and dial the mailbox number of the subscriber. He can send a page, leave the subscriber a voice messages or a fax. The page or messages will be deposited into the subscriber mailbox. This feature is called Global Toll-free Messaging. Some applications of this service include:

1. Global paging: anybody from anywhere in the world can page the subscriber.
2. Global hotline: companies allow customers and suppliers from anywhere in the world to leave them information such as product complaints, supply schedule etc.

To allow such service, a subscriber must sign up to the zone from which he allows Global Toll-free Messaging. The service is usage sensitive.

## 3.6 Outcalling

Outcalling refers to the capability of the SCP to automatically call a destination telephone number, normally a local telephone number. If the destination telephone number is busy or no answer, the SCP will automatically retry after a certain period of time. The retry interval and maximum number of retries are configurable. If outcalling fails after all attempts, the SCP will automatically send a returned message to the subscriber's mailbox to inform him about the failure and the reason. The SCP uses outcalling in the following features.

### Fax Anywhere Delivery

The SCP uses outcalling to call the destination fax machine to deliver the fax.

### Voice Anywhere Delivery

The SCP uses outcalling to call the destination telephone number to deliver the voice message. The subscriber can specify the following delivery options.

- Specify a delivery time (destination local time)
- Specify a password to be entered in order to listen to the message
- Allow the recipient to record a reply message

If the subscriber specifies for return receipt, a return receipt message will be sent back to the subscriber's mailbox if the voice message has been listened to by the receipt.

If the subscriber specifies a delivery time, the voice message will be delivered at the specified time. If no delivery time is specified, the message will be delivered to the recipient immediately.

If the subscriber specifies that a password is required to listen to the message, the recipient has to enter the correct password in order for the SCP to play the message. The recipient should have been informed about the password by the subscriber beforehand.

If the subscriber specifies that reply message is permitted, the recipient will be prompted by the SCP to record a reply message. If the recipient chooses to reply, the reply message will be sent to the subscriber's mailbox.

### **Message Notification by Outcalling**

The subscriber can have the SCP call his telephone to notify him about new messages. Instead of just ringing his telephone to alert the subscriber, the SCP will actually wait for the call to be answered, at which point the subscriber can enter his password to access his mailbox. The subscriber can specify the day and time range within which the SCP will do the outcalling.

### **Two-Call Fax Delivery**

The subscriber uses the Two-Call Fax Delivery feature to print out the fax document of a fax message, or a text message or email. The SCP uses outcalling to call the designated fax machine to deliver the fax. The subscriber can enter the telephone number of the fax machine during the session, or instruct the SCP to use a predefined telephone number.

## **3.7 Mailbox Profile**

A UniCONN mailbox includes characteristics that are specific and personal to the corresponding subscriber. Some of these characteristics can be changed by the subscriber, either through the telephone or from a browser software.

### **3.7.1 Personal Profile**

The mailbox personal profile allows the subscriber to configure his mailbox to suit his personal preference. A subscriber can change the various characteristics of his mailbox personal profile. The following characteristics are supported.

#### **Mailbox Password**

The mailbox password provides security against unauthorized access. A subscriber has to enter the correct password in order to access his mailbox. A mailbox password consists of 1 to 8 digits, and can be changed by the subscriber at any time.

#### **Name Recording**

The subscriber can record his name in his voice. This will be played whenever his mailbox is accessed by telephone, providing identification for the callers. If there is no name recording, only the mailbox ID will be played.

#### **Personal Greeting**

The subscriber can record a greeting for his mailbox. When a user calls into the subscriber's mailbox over the telephone, the SCP will play the personal greeting first. The mailbox greeting allows the subscriber to provide a personal touch for his mailbox, and can be used to convey any information to the callers. There are two types of mailbox greeting.



**Preferred Language**

The SCP uses pre-recorded voice prompts to provide instructions to the callers over the telephone. The SCP supports different types of language. The subscriber can specify his preferred language whenever he accesses his mailbox.

## 3.7.2 Service Profile

The mailbox service profile determines the services available for the mailbox, and consists of the following characteristics.

**Receive Voice Messages**

If yes, the mailbox can receive voice messages.

**Receive Fax Messages**

If yes, the mailbox can receive fax messages.

**Roaming Access**

If yes, the mailbox can be accessed from any SCP for message retrieval.

**Global Access**

If yes, the mailbox can be accessed from any SCP for the caller to send messages. This includes paging the subscriber from a remote SCP.

**Send Voice Messages**

If yes, the mailbox can be used to send voice messages. This includes the Voice Anywhere feature.

**Send Fax Messages**

If yes, the mailbox can be used to send fax messages. This includes the Fax Anywhere feature.

**Email Anywhere**

If yes, the mailbox can retrieve email.

**Mailbox Anywhere**

If yes, the mailbox can have Virtual Mailbox in other SCP's.

**Outcalling**

If yes, the mailbox can be used for outcalling function. This includes two-call fax delivery and message notification.

## 3.7.3 Class of Service

The mailbox class of service determines the mailbox capacity and capability, and consists of the following characteristics.

**Maximum Storage**

The maximum storage in terms of Mbytes.

**Maximum Number of Voice Messages**

The maximum number of voice messages allowed in a mailbox.

**Maximum Number of Fax Messages**

The maximum number of fax messages allowed in a mailbox.

**Maximum Number of Text Messages**

The maximum number of text messages allowed in a mailbox.

**Maximum Number of Outcalling Digits**

The maximum number of digits allowed in an outcalling telephone number for the mailbox.

## 3.8 Billing

The SCP enables agents to operate public communication services, and thus billing function is needed for the agents to process service charges for their customers. The process is made more complicated by the fact that a lot of the services involve operations run by other agents within the UniCONN network. In general, an agent derives the revenue from two main sources.

- Revenue from providing services to its subscribers
- Revenue from supporting services originated from other agents

Alternatively, an agent incurs his cost primarily in two areas.

- Direct cost for operating the services, such as Internet cost, telephone cost, facility, etc.
- Cost paid to the UniCONN network administration and to other agents in order to provide services for its subscribers

An agent can choose to provide only some of the services supported by the SCP. An agent which operates a SCP VPN will also have different consideration for service charges among its own SCP's as compared to other agents' SCP's.

### 3.8.1 Network Service Transaction

Network Service Transaction refers to a service transaction that goes through the UniCONN Network and requires support by other SCP's for local delivery. For example, a subscriber sending a voice message to another subscriber in another country constitutes a network service transaction, because the voice message is delivered from the originating SCP to the destination SCP over the Internet.

Every network service transaction has a service charge associated with it. The service charge is levied upon the originating SCP, and is used to pay for the operation of the UniCONN network that is maintained by United Connections Inc. (UCI), as well as the system storage and call processing activity of the destination SCP that is summoned to complete the transaction. The originating SCP in turn can charge its subscribers a transaction fee for the particular services.

Among the SCP's, the service charge is handled with "tokens". A token is the basic unit of service charge. Each SCP will have a token pool at its disposal. In general, every time a network service transaction is initiated, a certain number of tokens will be debited from the token pool of the originating SCP. On the other hand, a certain number of tokens will be credited to the token pool of the receiving SCP.

For each type of network service transaction, the service charge is computed based on the length of the message delivered or the transaction duration. The amount of service charge is determined based on agreement between each individual agent and UCI. The **Service Revenue Table** defines the amount of tokens receivable (to be credited) for the various services supported by the host SCP. The **Service Cost Table** defines, for each destination country or geographical area, the amount of tokens payable (to be

debited) for the various services used by the host SCP. Each SCP has its own Service Revenue Table and Service Cost Table, which are maintained by the MCP and downloaded to each individual SCP.

The token pool is replenished by purchasing new tokens from UCI, or gaining token credits from supporting inbound network service transactions. The debiting and crediting functions are handled automatically by the SCP software. Adding new tokens is again carried out by the MCP and downloaded to the corresponding SCP.

## 3.8.2 Local Service Transaction

Local Service Transaction refers to a service transaction that does not go through the UniCONN Network. For example, a subscriber sending a fax to a fax machine located in the same geographical area of the SCP constitutes a local service transaction, because the fax is delivered through the local telephone network, without going through the Internet.

Most of the local service transactions use the public telephone network, and will have a cost associated with it. The cost is levied upon the local agent that hosts the SCP, who in turn can charge its subscribers for a transaction fee for the particular services. Some of the local service transactions are initiated by subscribers of other SCP's, such as in Roaming Mailbox Access. In this case, the cost is compensated by the token credit derived from the corresponding network service transactions.

## 3.8.3 Subscriber Billing

A subscriber is billed for the various network services and local services used based on the subscriber rates and the actual usage. The subscriber rates are defined by the agent in the **Subscriber Rate Table** which is used to compute the billable amount for each individual subscriber. The agent might also define different ways of charging their subscribers. The SCP provides tools for the agent to define the service rate structure for billing purposes.

### Rate Plan

The Subscriber Rate Table provides the basis for billing subscribers for the various services. On top of that, each subscriber can be assigned a particular Rate Plan. The Rate Plan allows the agent to define different rate structures by applying modifying criteria to the basic rates defined in the Subscriber Rate Table, such as free minutes, discount rate, etc., thus providing the flexibility for charging different groups of subscribers with different rates.

### Prepaid Deposit

In addition to billing the subscribers based on actual usage, the subscribers can pay for the services using Prepaid Deposit. A subscriber can put in a cash deposit in advance, and any subsequent service charges will be automatically deducted from the deposit balance. No invoice will be generated for the subscriber as long as there is non-zero deposit balance in the subscriber's account. When the Prepaid Deposit is finally depleted, the invoicing function will resume, unless additional cash deposit is made by the subscriber.

### Credit Limit

A subscriber can be assigned a credit limit. Anytime the accumulated billable amount of the subscriber reaches the Credit Limit, the subscriber will be blocked from using the services, until payment is

received and the condition is cleared. A Credit Limit of "0" implies no credit limit is allowed. In other words, the subscriber can only use the services with prepaid deposit.

### **Prepaid Calling Card**

A Prepaid Calling Card enables a user to use certain features up to a specified amount, which is the face value of the Prepaid Calling Card. The user is not a permanent subscriber, and therefore does not own a UniCONN mailbox. The user uses the Card ID and PIN of the Prepaid Calling Card to access the SCP system. The combined Card ID and PIN constitute a 14-digit number that a user enters after calling the SCP, and is used by the SCP to validate the card identity and credit balance. The Prepaid Calling Card is issued and administered by the agent, and can only be used at the particular agent's SCP. The user will be charged based on the subscriber rate of the SCP.

## **3.9 Other features**

### **3.9.1 Auto-Dialer Support**

The subscriber can use an auto-dialer to automate the calling procedure for using the Fax Anywhere feature. The auto-dialer is physically connected between the subscriber's fax machine and the CO line. When the subscriber wants to send a fax using the Fax Anywhere feature, he will directly enter the telephone number of the destination fax machine. The auto-dialer is pre-programmed to intercept the dialed telephone number, and automatically call the SCP, log in to the subscriber's mailbox, and invoke the Fax Anywhere feature. The auto-dialer then feeds the entered telephone number to the SCP, upon which the SCP will generate the fax tone to signal transmission. Thus the entire calling procedure is automated and transparent to the subscriber, who will use the Fax Anywhere feature in the same way that he normally does to send a fax from his fax machine.

The auto-dialer is pre-programmed to support a list of specified country codes and city/area codes. Any telephone number entered by the subscriber that is destined to the specified country code and city/area code will be automatically routed through the SCP. Otherwise, the fax call will be placed through the normal public switch telephone network.

The subscriber can also use the auto-dialer to automate the login procedures. Instead of the destination fax telephone number, the subscriber enters the special code "0001". The auto-dialer sends the code to the SCP, which will automatically log into the subscriber's mailbox and prompt for the password.

Any auto-dialer capable of programming and generating the digit sequence required by the SCP can be used to automate the calling procedure. United Connections Inc. offers the Power Link auto-dialer which can be directly programmed from the System Administrator console.

## **4. Future Enhancements**

### **4.1 Text-to-Speech**

#### **Email Retrieval by Telephone**

When the subscriber accesses his mailbox by telephone, he can review the email header information. The SCP will play the header information by text-to-speech, and the subscriber can choose to delete the email from his email account(s), and/or get the text contents of the email. If the subscriber decides to get the text contents of the email, he can then listen to the contents by text-to-speech, or have it printed out as fax.

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# **Service Communication Platform**

**Release 3.0**

**Telephone User Interface**

**Revision 1.08**

**United Connections Inc.**

## TABLE OF CONTENTS

<b>1. INTRODUCTION .....</b>	<b>1-1</b>
1.1 REVISION HISTORY .....	1-1
1.2 RELATED DOCUMENTS .....	1-1
<b>2. TELEPHONE USER INTERFACE .....</b>	<b>2-2</b>
2.1 PROMPTS AND MESSAGES .....	2-2
2.1.1 <i>Interrupting Prompts and Messages</i> .....	2-3
2.2 EXTERNAL CALLER USER INTERFACE .....	2-4
2.2.1 <i>Multi-Lingual Support</i> .....	2-5
2.2.2 <i>Exit the System</i> .....	2-5
2.2.3 <i>Personal Telephone Number</i> .....	2-5
2.2.4 <i>Mailbox Greeting Menu</i> .....	2-5
2.2.5 <i>Prepaid Card Menu</i> .....	2-6
2.2.6 <i>Identify Mailbox Menu</i> .....	2-7
2.2.7 <i>Page Subscriber Menu</i> .....	2-7
2.2.8 <i>Leave Voice Message Menu</i> .....	2-8
2.3 SUBSCRIBER USER MENU .....	2-9
2.3.1 <i>Local Access Port</i> .....	2-9
2.3.2 <i>Roaming Access Port</i> .....	2-9
2.3.3 <i>Local Calling Port</i> .....	2-9
2.3.4 <i>Mailbox Message Menu</i> .....	2-10
2.3.5 <i>Mailbox Main Menu</i> .....	2-10
2.3.6 <i>Retrieving New Messages</i> .....	2-11
2.3.6.1 <i>End Of Voice Message Menu</i> .....	2-13
2.3.6.2 <i>End Of Returned Voice Message Menu</i> .....	2-15
2.3.7 <i>Record Menu</i> .....	2-16
2.3.7.1 <i>End Of Recording Menu</i> .....	2-16
2.3.8 <i>Record Message Menu</i> .....	2-17
2.3.8.1 <i>End Of Record Message Menu</i> .....	2-17
2.3.9 <i>Enter Single Address Menu</i> .....	2-18
2.3.10 <i>Enter Multiple Address Menu</i> .....	2-19
2.3.10.1 <i>Enter Subsequent Address Menu</i> .....	2-20
2.3.11 <i>Enter Phone Number Menu</i> .....	2-21
2.3.12 <i>Retrieving New Fax Messages Menu</i> .....	2-22
2.3.13 <i>End Of Fax Message Menu</i> .....	2-24
2.3.13.1 <i>End Of Returned Fax Message Menu</i> .....	2-26
2.3.14 <i>Reviewing E-mail</i> .....	2-26
2.3.14.1 <i>End Of E-mail Menu</i> .....	2-26
2.3.15 <i>Retrieving Saved Messages</i> .....	2-27
2.3.16 <i>Send Message Menu</i> .....	2-29
2.3.16.1 <i>Voice Anywhere Delivery Option Menu</i> .....	2-30
2.3.17 <i>Mailbox Options Menu</i> .....	2-31
2.3.17.1 <i>Mailbox Profile Menu</i> .....	2-31
2.3.17.1.1 <i>Change Greeting Menu</i> .....	2-31
2.3.17.1.2 <i>Change Mailbox Password Menu</i> .....	2-32
2.3.17.1.3 <i>Change Name Recording Menu</i> .....	2-32
2.3.17.1.4 <i>Change Personal Phone List Menu</i> .....	2-32
2.3.17.1.5 <i>Change Preferred Language Menu</i> .....	2-33
2.3.17.2 <i>Check Balance or Add Credit Menu</i> .....	2-33
2.3.17.2.1 <i>Enter Prepaid Card Number Menu</i> .....	2-34
2.3.17.3 <i>Virtual Mailbox Options Menu</i> .....	2-35
2.3.17.4 <i>Outcalling Option Menu</i> .....	2-35
2.3.17.4.1 <i>Change Outcalling Schedule Menu</i> .....	2-36
2.3.17.5 <i>Change Automatic Fax Delivery Option</i> .....	2-37

---

2.4	OUTCALLING USER INTERFACE .....	2-37
2.4.1	<i>Outcalling to Operator Assisted Pager</i> .....	2-38
2.5	VIRTUAL MAILBOX USER INTERFACE .....	2-38
2.6	ROAMING ACCESS USER INTERFACE .....	2-39
2.6.1	<i>Roaming Access Mailbox Options Menu</i> .....	2-40
2.7	VOICE ANYWHERE USER INTERFACE .....	2-40
2.7.1	<i>End of Voice Anywhere Menu</i> .....	2-41
2.8	FAX ANYWHERE USER INTERFACE .....	2-41
2.9	SYSTEM ADMINISTRATION USER INTERFACE .....	2-41
2.9.1	<i>System Administrator Menu</i> .....	2-42
2.9.1.1	Changing Welcome Greeting Menu .....	2-42
2.9.1.2	Sending Broadcast Message .....	2-42
2.10	OTHER FEATURES .....	2-42
2.10.1	<i>Credit Reminder Notice</i> .....	2-42



# 1. Introduction

The Service Communication Platform (SCP) is a versatile platform for developing application to serve the expanding and evolving need for communication. The SCP allows integration of the telephony and the data world, providing value-added services to both corporate clients as well as to public users. This document describes the telephone user interface of SCP Release 3.0.

## 1.1 Revision History

Date	Revision	Significant changes
12/01/98	1.01	
01/25/99	1.02	
02/10/99	1.03	
03/05/99	1.04	<ul style="list-style-type: none"><li>• Removed all Delivery Options: urgent, private and return receipt. (These options should remain in CCP user interface.)</li><li>• Created submenu Enter Subsequent Address Menu.</li><li>• Removed Express Send Menu</li><li>• Removed Selecting SCP Menu and modified flow of Mailbox Anywhere Option Menu</li><li>• Removed sections with no user interface impact: Outcalling to Tone Pager and Auto-Dialer Support</li><li>• Added Prepaid Card Number entry option inside Mailbox Option Profile</li></ul>
03/08/99	1.05	<ul style="list-style-type: none"><li>• Renamed [2001] to Welcome Greeting</li><li>• Digits to choose second or third language are no longer configurable</li><li>• When user presses address digits without ending with #, the SCP will not prompt for additional addresses.</li><li>• At the end of Mailbox Message Menu, if the mailbox has already expired, the subscriber will be prompted the Enter Prepaid Card Number Menu.</li></ul>
03/17/99	1.06	<ul style="list-style-type: none"><li>• Always prompt for second or third language selection at Welcome Greeting</li><li>• Allow callers to enter prepaid card at Welcome Greeting.</li><li>• Removed options to select outcall type.</li><li>• Roaming subscribers can hear message information even when logging into the SCP for the first time.</li></ul>
03/19/99	1.07	<ul style="list-style-type: none"><li>• All telephone or mailbox number entry do not need # to terminate.</li></ul>
03/22/99	1.08	<ul style="list-style-type: none"><li>• Added all missing prompt numbers</li></ul>

## 1.2 Related Documents

Service Communication Platform Functional Requirements Specification.

Service Communication Platform System Administration Console User Interface.

Service Communication Platform Internet User Interface.

Service Communication Platform English System Prompt Text.

Service Communication Platform Chinese System Prompt Text.

## 2. Telephone User Interface

The telephone user interface is the primary interface for communicating with the SCP. The user calls into (or called by) the SCP through a touch-tone phone to establish a voice connection with one of the SCP ports. The SCP communicates to the user by playing system prompts or recorded messages. The user communicates to the SCP by the touch-tone telephone key pad, which generates DTMF signals that are recognized by the system as commands or parameters.

### 2.1 Prompts and Messages

Messages imply voice messages recorded by callers and are addressed to a subscriber. They are stored in the subscriber's mailbox and can be played back any time the subscriber logs in to his mailbox. Messages also include recordings by the subscribers, such as personal greeting, subscriber names, etc.

Prompts are pre-recorded verbal instructions that guide the user for using the system, or information that the user is interested in (e.g. number of outstanding messages, etc.) There are three types of prompts.

#### Menu Prompts

These are prompts that list out the valid command options. The user in turn chooses the particular option by pressing the corresponding key. Any key press that is not one of the valid options will result in the Error Prompt:

*[0081] We're sorry, we cannot recognize this command..*

The SCP will then replay the same Menu Prompt and wait for valid input. The same process of handling invalid input will be repeated for the number of times defined by the **Re-prompt Count**, upon which the SCP will play the following prompt and terminate the call.

*[0042] Good-bye.*

If there are no user input at all for the duration specified by the **Re-prompt Time-out**, the SCP will replay the same Menu Prompt and wait for input again, for up to the number of times defined by the **Re-prompt Count**. If there is still no input within the time-out period, the SCP will play the following prompt and terminate the call.

*[0042] Good-bye.*

In most situations, entering [\*] at a Menu Prompt will cancel the current operation and the SCP will go back to the previous prompt.

#### Telephone Number Prompts

These are prompts that request the user to enter telephone numbers or mailbox Ids of variable length. The input does not need a [#] to terminate, although a trailing [#] will immediately indicate all digits have been entered. While the digits are being entered, if a successive digit is not entered within the duration specified by the **Inter-digit Time-out**, the SCP will treat the entered digits to as the telephone number.

In most situations, entering [\*] at an Input Request Prompt with some digits entered will cause the SCP to discard the digits entered so far and plays the Input Request Prompt again; while entering [\*] with no digits entered will cancel the current operation and the SCP will go back to the previous prompt.

## Input Request Prompts

These are prompts that request the user to enter digit input of variable length, such as passwords. The input is normally terminated by pressing [#], and the digit sequence without the trailing [#] will be used as input. While the digits are being entered, if a successive digit is not entered within the duration specified by the **Inter-digit Time-out**, the SCP will play the following prompt to remind the user.

*[2915] If you have finished, press #.  
Otherwise, please enter the remaining digits.*

If a successive digit is still not entered within another duration specified by the **Inter-digit Time-out**, the SCP will play the same prompt again, for the number of times defined by the **Re-prompt Count**, upon which the SCP will play the following prompt and terminate the call.

*[0042] Good-bye.*

If there are no user input at all for the duration specified by the **Re-prompt Time-out**, the SCP will replay the same Input Request Prompt and wait for input again, for up to the number of times defined by the **Re-prompt Count**. If there is still no input within the time-out period, the SCP will play the following prompt and terminate the call.

*[0042] Good-bye.*

In most situations, entering [\*] at an Input Request Prompt with some digits entered will cause the SCP to discard the digits entered so far and plays the Input Request Prompt again; while entering [\*] with no digits entered will cancel the current operation and the SCP will go back to the previous prompt.

## Error Prompts

These are prompts that inform the user that the SCP cannot proceed with the intended operation due to some error condition, such as invalid user input, system resource constraint, etc. After playing an Error Prompt, the SCP will go to a Menu Prompt or Input Request Prompt (probably the same prompt) for user input.

## 2.1.1 Interrupting Prompts and Messages

In general, both prompts and messages may be interrupted by a touch-tone key press. A message can be interrupted anytime during its playback with any touch-tone key press. Upon a key-press interruption, if it is the message header being played, it will skip to the message body; if it is the message body being played, the system will stop playing the message and prompt for the end-of-message options. An exception is the '#' key which will cause the system to skip the current message and start playing the next message.

The system's response to a key press interruption to prompts will depend on the type of prompts.

### Interrupting Menu Prompts

Menu Prompts may be interrupted anytime. Interrupting the prompt with a valid key command will cause the system to proceed to the next step. Interrupting the prompt with an invalid key command will cause the system to play the "invalid command" Error Prompt.

### Interrupting Input Request Prompts

Input Request Prompts may be interrupted anytime. The prompt will stop playing and the key press will be treated as the first digit entered as input.

### Interrupting Error Prompts

Error Prompts might not be interrupted. If a key is pressed while the system is playing an Error Prompt, the system will ignore and discard the key press and continue to play the Error Prompt to completion.

## External Caller User Interface

An external caller is any person placing a phone call to the Main Access Number of the SCP, with the intention of trying to leave a voice or fax message for someone. The caller will be greeted by the Welcome Greeting.

*[2001] Welcome to the UniCONN Messaging System.*

This is the default Welcome Greeting. The System Administrator can record a customized Welcome Greeting that is more appropriate for the organization.

If the SCP has a second or a third language enabled, the SCP will prompt the caller to select the preferred language at this point. More information in section 2.2.1 Multi-Lingual Support.

The SCP then prompts the caller to enter the mailbox ID of the subscriber that he wants to call. Since the mailbox ID has the same format as the telephone number, the SCP actually prompts for the telephone number. Also, it is possible for the caller to address a subscriber that belongs to a remote SCP. In this case, the caller is analogous to making a long distance call to the subscriber, so he will be required to enter the access code, country code, and/or city code before the subscriber's mailbox ID. The SCP will always inform the caller about the international and domestic long distance access codes.

*[2002] Please dial the telephone number you wish to call.*

*[2706] For a domestic long distance number, dial...  
...<domestic long distance access code>...*

*[2902] ...,area code, and telephone number.*

*[2788] For an international number, dial...  
...<international access code>...*

*[2910] ...,country code, and telephone number.*

*[0418] To quit, press \*.*

When the caller has finished, the SCP will proceed to check the validity of the entered mailbox ID. Prompt 2706 and 2902 will not be played if no access code is required for domestic long distance calls.

If the caller has entered a valid prepaid card number instead of a valid mailbox number, the SCP will prompt him with the Prepaid Card Menu.

If the caller enters an invalid mailbox ID, the SCP will play the following Error Prompt and then prompt for the mailbox ID again.

*[2020] We're sorry, we cannot recognize this number.*

The same process of handling invalid input will be repeated for the number of times defined by the **Re-prompt Count**, upon which the SCP will play the following prompt and terminate the call.

*[0042] Good-bye.*

If the caller enters a valid mailbox ID, the SCP will open the corresponding mailbox and the caller is presented with the Mailbox Greeting Menu.

To facilitate Roaming Access for subscribers, who might not be familiar with the international access code used in other countries, there is another way for subscriber access. When being prompted to dial the telephone number, the subscriber can press [#] to indicate to the SCP that this is a subscriber access. The system will then prompt for the subscriber's mailbox ID through the Identify Mailbox Menu. In this case, the subscriber must enter the country code, and/or city code before his mailbox ID. Mailbox ID without country and/or city code will not be considered valid. International access code is neither needed nor accepted. The caller/ subscriber will be presented with for his password.

## 2.2.1 Multi-Lingual Support

After playing the Welcome Greeting, the SCP will prompt the caller to select the preferred language if it has a second or a third language enabled:

[3017] *To use...<second language>...(in second language)*  
[3019] *Press <1>*  
[3020] *... followed by #.*  
[3017] *To use...<third language>...(in third language)*  
[3019] *Press <2>*  
[3020] *... followed by #.*

If no second or third language is enabled, then the above prompts will not be played. The caller can select the second language or the third language before entering any telephone number. The SCP will then play the prompt for entering mailbox ID in the language of choice. Once a language is switched, it cannot be switched again nor switched back to the primary language. It will be used for the entire call. A new call will always start with the primary language.

If the caller enters any digit sequence other than [1#] or [2#], the digit sequence is considered a part of the destination number.

## 2.2.2 Exit the System

When being prompted to enter the mailbox ID, if the caller presses [\*], he will be exited from the system.

[0042] *Good-bye.*

## 2.2.3 Personal Telephone Number

If a subscriber's mailbox is configured with the personal telephone number (PTN) option, the external caller can directly call the PTN instead of the SCP Main Access Number. The SCP will open the corresponding mailbox and the caller is presented with the Mailbox Greeting Menu. Note that in this case the caller is not able to switch to another language.

## 2.2.4 Mailbox Greeting Menu

When a caller reaches a subscriber's mailbox, the SCP will play the following.

Case 1 The subscriber has recorded a Personal Greeting, which will be played.

Case 2 The subscriber has not recorded a Personal Greeting, but has recorded his name. The SCP will play the recorded subscriber name.

Case 3 The subscriber has not recorded a Personal Greeting, nor recorded his name. The SCP will play,  
[2045] *Mailbox...<mailbox number>*

In all cases, the SCP will play prompt 3015 if the mailbox has defined a valid pager number and he is allowed to receive pager notification.

[3015] *To page the person, press 2.*

In all cases, the SCP will play the following to prompt the caller to leave messages.

*[2823] To leave a message, begin speaking after the tone. When you have finished recording, you may hang up to deliver the message or press any key for more options.*

*[2822] To send a fax, press the START button on your fax machine.*

**Case 4** The subscriber's mailbox is in a remote SCP. The SCP will play,

*[2045] Mailbox...<mailbox number>*

*[2708] ...of...<SCP name>*

*[3015] To page the person, press 2.*

*[2823] To leave a message, begin speaking after the tone. When you have finished recording, you may hang up to deliver the message or press any key for more options.*

*[2822] To send a fax, press the START button on your fax machine.*

In the above cases, if the fax service is not supported by the mailbox's service profile, prompt [2822] will not be played. If the virtual mailbox option is not supported by the mailbox's service profile, or the subscriber has not set up his pager, prompt 3015 will not be played.

The SCP will then play a "beep" to signal the caller to start recording. At the end of the recording, the caller can hang up and the message will be delivered. If the caller presses any key to stop the recording, he will be presented with the Leave Voice Message Menu.

If the caller is calling from a fax machine and presses the START button after the recording, the SCP will detect the fax tone sent by the fax machine and turn on fax receiving. The received fax then becomes a fax message, with the voice recording as attached voice memo.

If the caller is calling from a fax machine and presses the START button before the "beep", the SCP will detect the presence of the fax tone generated by the originating fax machine, and immediately turn on fax receiving without any voice recording. The received fax then becomes a fax message without attached voice memo.

Some fax machines do not generate the fax tone, even upon pressing the START button. To accommodate these types of fax machine, the caller can press [7] to initiate fax transmission. If the caller presses [7] before the "beep", the SCP will immediately turn on fax receiving. If the caller presses [7] after the "beep", the voice recording is stopped and he will be presented with the Leave Voice Message Menu, at which point he can press option [7] and the SCP will turn on fax receiving.

In the case that a fax port is not available, the SCP will play the following error message, and then prompt the caller to enter the mailbox ID again (presumably for another subscriber).

*[0824] We're sorry, there are no fax lines available at this time. Please try again later.*

If the caller presses [2] before the "beep" to page the subscriber, he will be presented with the Page Subscriber Menu.

The subscriber can press [#] to indicate to the SCP that this is a subscriber access. The caller/ subscriber will be presented with for his password.

## 2.2.5 Prepaid Card Menu

A subscriber hears this menu when he has already entered a valid prepaid card number. The SCP will ask for the mailbox ID

*[3021] Enter the mailbox number for using this Prepaid Card.  
To quit, press \*.*

If the subscriber enters an invalid mailbox ID, the SCP will play the following Error Prompt and then prompt for the mailbox ID again.

[2020] *We're sorry, we cannot recognize this number.*

The same process of handling invalid input will be repeated for the number of times defined by the **Re-prompt Count**, upon which the SCP will play the following prompt and terminate the call.

[0042] *Good-bye.*

The call will be disconnected and the originally entered prepaid card number will be discarded.

If the subscriber has entered a valid number, the SCP will play the following to confirm.

[0579] *You have entered...<mailbox id>.*

[0528] *If this is correct, press 1.*

*If not, press 2.*

[1] The SCP will play

[3022] *Thank you. Your new credit is...*

[2900] *...<dollar amount>...dollars...*

[2901] *...<cent amount>...cents.*

Then, if there is an expiration date for the mailbox account, the SCP will also play

[3014] *Your account will expire on...<expiration date>*

If there is no expiration date, then [3014] will not be played. The SCP will then play

[3002] *Thank you for calling, good-bye.*

The call will be disconnected afterwards.

[2] The specified telephone number will be canceled. The SCP will prompt for the Prepaid Card Menu again.

## 2.2.6 Identify Mailbox Menu

The menu prompts the subscriber to identify his mailbox ID. The SCP will play

[3023] *Enter your mailbox number.*

*To quit, press \*.*

If the subscriber enters an invalid mailbox ID, the SCP will play the following Error Prompt and then prompt for the mailbox ID again.

[2020] *We're sorry, we cannot recognize this number.*

The same process of handling invalid input will be repeated for the number of times defined by the **Re-prompt Count**, upon which the SCP will play the following prompt and terminate the call.

[0042] *Good-bye.*

If the subscriber enters a valid mailbox ID, the SCP will return to the menu sequence at the point after the Identify Mailbox Menu would be invoked.

## 2.2.7 Page Subscriber Menu

When the caller presses [2] to page the subscriber, the SCP might play the following prompt.

*[3001] Please enter your telephone number.*

The playing of prompt 3001 is a configurable option for the SCP system. No matter whether prompt 3001 is played, the SCP will then play “beep-beep-beep” to signal the caller to enter his telephone number. After entering his telephone number, the caller can terminate with #, or just hang up. If the caller presses # to terminate, the SCP will play the following prompt and exit the system.

*[3002] Thank you for calling, good-bye.*

Either case, the subscriber will be paged and the entered number will be displayed.

## 2.2.8 Leave Voice Message Menu

When the caller stops the recording of the message, the SCP will prompt for the following.

*[3003] To send the message now, press 1.*

*To re-record, press 2.*

*To replay, press 3.*

*To cancel, press 4.*

*To continue recording, press 5.*

*[3005] To send with a fax, press 6.*

Note that at this point, the message recording is considered complete. If the caller disconnects the call without choosing any menu option, or the SCP times out upon no digit input, the recorded message will be delivered to the subscriber's mailbox.

- [1] The recorded message will be delivered. The SCP will play the following and terminate the call.

*[0302] Message delivered.*

*[0042] Good-bye.*

- [2] The recorded message will be discarded, and the caller will be prompted to start recording again.

*[0018] Recording erased.*

*[2012] Please record your message after the tone. When you have finished recording, you may either hang up to deliver the message or press any key for more options.*

- [3] The system will replay the recorded message once and then prompt for the Leave Voice Message Menu again.

- [4] The recording session will be canceled, and the SCP will play the following and terminate the call.

*[0018] Recording erased.*

*[0042] Good-bye.*

- [5] The SCP will play the following prompt and the caller can resume recording after the beep. The previous recording that was interrupted will not be lost, and will be appended with the new recording.

*[2799] Please continue recording after the tone. When you have finished recording, press any key to continue.*

Note that in case the caller has exceeded the maximum recording time, this option will not be available.

- [6] The SCP will play the following prompt to signal the caller to start the fax transmission.

*[2858] Please press the START button on the fax machine now .*



The caller can then hang up and the fax message together with the voice memo will be delivered. Some fax machines do not generate the fax tone, even upon pressing the START button. To accommodate these types of fax machine, the SCP will automatically start the fax receiving mode shortly after prompting the caller to press the START button.

## 2.3 Subscriber User Menu

A subscriber accesses his mailbox to retrieve messages or utilize other features supported by the SCP. To access the mailbox, the subscriber follows the same procedure as an external caller. At the Mailbox Greeting Menu, the subscriber presses [#] to indicate to the SCP that this is a subscriber access. The system will then prompt for the subscriber's password.

*[0022] Enter your password followed by #.  
To quit, press \*.*

If the subscriber enters an invalid password, the SCP will play the following Error Prompt and then prompt for the password again.

*[0023] We're sorry, we cannot recognize this password.*

If the subscriber fails to enter the correct password in the number of successive attempts defined by **Re-prompt Count**, the SCP will play the following prompt and terminate the call.

*[0042] Good-bye.*

If the subscriber enters a valid password, he will be logged in to his mailbox, and will be presented with the Mailbox Message Menu.

### 2.3.1 Local Access Port

A voice port can be configured with Local Access but not Roaming Access, in which case the port cannot be used for Roaming Mailbox access. When a call is directed to a local access port, the SCP will only accept mailbox ID of mailboxes that belong to this SCP. If a subscriber attempts to log on to a remote mailbox via a local access port, the SCP will play the following error prompt and terminate the call.

*[3006] We're sorry, this port cannot be used for roaming access.  
[0042] Good-bye.*

### 2.3.2 Roaming Access Port

A voice port can be configured with Roaming Access but not Local Access, in which case the port is only used for Roaming Mailbox access. When a call is directed to a roaming access port, the SCP will only accept mailbox ID of mailboxes that belong to a remote SCP. If a subscriber attempts to log on to a local mailbox via a roaming access port, the SCP will play the following error prompt and terminate the call.

*[3007] We're sorry, this port cannot be used by local subscribers.  
[0042] Good-bye.*

### 2.3.3 Local Calling Port

A voice port can be configured with Local Calling but not Global Calling, in which case the port cannot be used by non-subscribers to send messages to mailboxes in a remote SCP. When a caller enters the mailbox

ID of a remote mailbox from a local calling port, the SCP assumes this is roaming mailbox access (provided the same port is configured with roaming access) and will immediately prompt for the password.

*[0022] Enter your password followed by #.  
To quit, press \*.*

The caller in this case will not be able to leave a message for the remote subscriber.

## 2.3.4 Mailbox Message Menu

Once the subscriber successfully logs into his mailbox, the SCP will automatically switch to the preferred language as set up by the subscriber. The SCP first will play any system messages that reflect the operational status of the subscriber's mailbox.

At this point, any system messages such as the following will be played.

*[0026] Your mailbox is almost full, please delete those messages which are not needed.*

*[0578] We cannot reach you to deliver your messages. The last attempt was made  
on... <date and time>.*

The subscriber then will be informed if there are any new messages. Note that the SCP does not inform about the presence of saved messages.

Case 1 There are no new messages, and the SCP will not play any message information.

Case 2 There are new voice messages, new fax messages, or new e-mail, and the SCP will play,

*[0032] You have...*

If there are new voice messages,

*[0033] <one>...new message.*

or,

*[0034] <N>...new messages.*

If there are new fax messages,

*[0807] <one>...new fax message.*

or,

*[0808] <N>...new fax messages.*

If there are new e-mail,

*[2779] <N>...new e-mail.*

If the mailbox has not expired, the SCP then prompts for the Mailbox Main Menu. Otherwise, the SCP will prompt for the Enter Prepaid Card Number Menu. After entering the prepaid card number, the subscriber will hear the Mailbox Main Menu.

## 2.3.5 Mailbox Main Menu

The Mailbox Main Menu is context sensitive, depending on the status of the mailbox messages.

*[2703] To play new messages, press 1.*

*[2805] To send a message, press 2.*

*To change mailbox options, press 3.*

*[2705] To retrieve new fax messages, press 4.*

*[2780] To retrieve e-mail, press 5.*

[2704] *To play saved messages, press 6.*

[0418] *To quit, press \*.*

Prompts 2703, 2705, 2780, 2704 may or may not be played depending on the presence of new voice messages, fax messages, or e-mail. If the subscriber accidentally selects the options that are not prompted, the SCP will play the following prompt and then prompt for the Mailbox Main Menu again.

[0030] *You have no new messages.*

or,

[0031] *You have no saved messages.*

or,

[0816] *You have no new fax messages.*

or,

[2781] *You have no new e-mail.*

If the subscriber presses [\*], he will be exited from the Mailbox Main Menu and will be prompted to enter the mailbox ID again.

Key pressed	Menu	Next layer of menu
1	Retrieving New Messages	End of Voice Message Menu End of Returned Voice Message Menu
2	Send Message Menu	Enter Multiple Address Menu, Record Message Menu, (optional Voice Anywhere Menu)
3	Mailbox Option Menu	1. Mailbox Profile Menu 2. Check Balance or Add Credit Menu 3. Virtual Mailbox Options Menu 4. Outcalling Option Menu 5. Change Automatic Fax Delivery Option
4	Retrieving New Fax Messages Menu	End of Fax Message Menu End of Returned Fax Message Menu Enter Phone number Menu
5	Reviewing E-mail	End of E-mail Menu
6	Retrieving Saved Messages	

## 2.3.6 Retrieving New Messages

When the subscriber presses [1] at the Mailbox Main Menu to listen to the new messages, the SCP will successively play all the new voice messages, followed by the new fax message, then followed by new e-mail. Within each category, messages are played in chronological order in which they arrive at the mailbox. The messages will be numbered according to the order of play.

For voice messages, SCP will play the prompt

[0039] *Message...<N>*

*...<message contents>...*

### Message from Virtual Mailbox or Global Access

A message might have been received from a Virtual Mailbox that the subscriber sets up in a another SCP, or is sent by a non-subscriber from a remote SCP. In this case, the node name will be played before the message contents.

[0039] *Message...<N>*

[2738] *... received from...<SCP name>*

*...<message contents>*

If the message has other characteristics, prompt [2738] will still be played first.

#### Forwarded Message

A message might have been forwarded from another subscriber with a memo appended at the front. In this case, the forwarding subscriber's recorded name or mailbox ID and the memo contents will be played before the message contents.

```
[0039] Message...<N>
[0040] ... forwarded from...
      ...<forwarding subscriber's name>...
      ...<forwarding memo>...
      ...<message contents>
```

or if the forwarding subscriber does not have a recorded name,

```
[0039] Message...<N>
[0040] ... forwarded from...
[2045] Mailbox...<mailbox number>
      ...<forwarding memo>...
      ...<message contents>
```

or if the message was forwarded from a remote SCP,

```
[0039] Message...<N>
[0040] ... forwarded from...
[2045] Mailbox...<mailbox number>
[2708] ...of...<SCP name>
      ...<forwarding memo>...
      ...<message contents>
```

or if the message was forwarded from a remote CCP,

```
[0039] Message...<N>
[0040] ... forwarded from...
[2045] Mailbox...<mailbox number>
[2708] ...of...
[2709] Node... <node ID>
      ...<forwarding memo>...
      ...<message contents>
```

#### Reply Message

A message might be a reply message from another subscriber. In this case, prompt [0040] will be replaced with

```
[2773] ... replied by...
```

If the message was delivered via Voice Anywhere, then the destination telephone number instead of the destination mailbox ID will be announced.

```
[2711] Telephone number...<telephone number>
```

After the reply message is played, the original message will also be played. If the original message is a fax message, then the accompanying voice memo (if any) will be played. Note that the original fax document is not sent with the reply message. For repeated reply messages, only the most recent original message will be attached.

#### Returned Message

A voice message that was delivered (including reply message) or forwarded by the subscriber might have failed to reach the destination mailbox (local or remote). In this case, the original message will be returned to the subscriber's mailbox as new message, and the SCP will play the following to alert the subscriber. If the message was delivered or forwarded to multiple destination mailboxes, all the destination mailboxes that

failed to receive the message and the respective reason of failure will be announced before the original message is played.

[2710] *The following voice message could not be delivered to...*

*...<receiving subscriber's name>...*

or if the receiving subscriber does not have a recorded name,

[2045] *Mailbox...<mailbox number>*

or if the message was delivered to a remote SCP,

[2045] *Mailbox...<mailbox number>*

[2708] *...of...<SCP name>*

or if the message was delivered to a remote CCP,

[2045] *Mailbox...<mailbox number>*

[2708] *...of...*

[2709] *Node... <node ID>*

or if the message was delivered using the Voice Anywhere feature,

[2711] *Telephone number...<telephone number>*

After the destination, the reason for failure (one of the following) will be played before the contents of the original message.

[2749] *...because the destination mailbox was full.*

[2750] *...because there was no answer at the destination telephone.*

[2751] *...because there was a connection problem with the remote site.*

[2752] *...because the recipient did not enter the correct password.*

*...<message contents>*

## 2.3.6.1 End Of Voice Message Menu

At the end of a message playback, the subscriber has the following options.

[2047] *To save, press 1.*

[2742] *To reply, press 2.*

[2756] *To replay, press 3.*

*To delete, press 4.*

*To forward, press 5.*

*To go back to the previous message, press 6.*

*To play the time stamp, press 0.*

*To skip to the next message, press #.*

*To quit, press \*.*

The Reply option will only be prompted if the sender of the message is a subscriber, including subscriber from a remote SCP or CCP. Also, the option will not be available if the message is a returned message due to failed delivery.

- [1] The message will be saved, and the SCP will play the following prompt and then move on to play the next message.

[0048] *This message will be saved after you exit.*

- [2] The subscriber will be presented with the Record Message Menu for recording a reply message to be sent to the sender. After the subscriber has finished recording, the SCP will play the following to confirm, and then return to the End Of Voice Message Menu.

[2715] *Your reply will be delivered after you exit.*

[3] The SCP will replay the message and then prompt for the End Of Voice Message Menu again.

[4] The SCP will delete the message, play the following prompt, and then move on to play the next message in the queue.

*[0055] This message will be deleted after you exit.*

[5] The SCP will play the following to prompt the subscriber to record a voice memo to be appended at the front of the forwarded message.

*[2916] Please record a voice memo for the forwarding message.*

The subscriber will then be presented with the Record Message Menu for recording a memo. A voice memo is always required for a forwarded message. However, the subscriber can avoid recording a voice memo by pressing any key to terminate the recording, then pressing [4] to cancel recording.

The subscriber will then be prompted for the Enter Multiple Address Menu to specify the destination mailbox(es) to be forwarded to. The SCP then plays the following to confirm the message forwarding.

*[0304] This message will be forwarded after you exit.*

After that, the subscriber will be returned to the End Of Voice Message Menu.

[6] The SCP will go back to play the previous message. The current message will remain as a new message. If this is the first message in the queue, the SCP will play the following prompt and then go back to the Mailbox Main Menu.

*[2716] This is your first message.*

[0] The SCP will play the message envelope and then prompt for the End Of Voice Message Menu again.

*[0039] Message...*

*[0041] ...was received on...*

*<date and time>*

or if the message was sent by another local subscriber,

*[0039] Message...*

*[0512] ...from...*

*...<originating subscriber's name>*

*[0041] ...was received on...*

*<date and time>*

or if the message was sent by another local subscriber who does not have a recorded name,

*[0039] Message...*

*[0512] ...from...*

*[2045] Mailbox...<mailbox number>*

*[0041] ...was received on...*

*<date and time>*

or if the message was sent by a subscriber from a remote SCP,

*[0039] Message...*

*[0512] ...from...*

*[2045] Mailbox...<mailbox number>*

*[2708] ...of...<SCP name>*

*[0041] ...was received on...*

*<date and time>*

*[2772] It was recorded on...*

*<local date and time>*

or if the message was sent by a subscriber from a remote CCP,

[0039] *Message...*  
 [0512] *...from...*  
 [2045] *Mailbox...<mailbox number>*  
 [2708] *...of...*  
 [2709] *Node...<node ID>*  
 [0041] *...was received on...*  
           *<date and time>*  
 [2772] *It was recorded on...*  
           *<local date and time>*

- [#] The SCP will move on to play the next message. The current message will remain as a new message. If there are no more new voice messages, the new fax messages and/or email will be played. If there are no more new messages, the SCP will play the following prompt and then go back to the Mailbox Main Menu.

[0057] *All messages have been retrieved.*

- [\*] The subscriber will be returned to the Mailbox Main Menu.

## 2.3.6.2 End Of Returned Voice Message Menu

At the end of a message playback, if the message is a return from failure of delivery, the subscriber has the following options.

[2753] *To save, press 1.*  
           *To send again, press 2.*  
           *To replay, press 3.*  
           *To delete, press 4.*  
           *To send to a different destination, press 5.*  
           *To go back to the previous message, press 6.*  
           *To play the time stamp, press 0.*  
           *To skip to the next message, press #.*  
           *To quit, press \*.*

- [1] The message will be saved, and the SCP will play the following prompt and then move on to play the next message.

[0048] *This message will be saved after you exit.*

- [2] The SCP will attempt to deliver the message to the same destination mailbox or telephone number after the subscriber hangs up, and the returned message will be automatically deleted. The SCP will play the following to confirm, and then move on to play the next message.

[2754] *This message will be delivered again after you exit.*

- [3] The SCP will replay the message and then prompt for the End Of Returned Voice Message Menu again.

- [4] The SCP will delete the message, play the following prompt, and then move on to play the next message in the queue.

[0055] *This message will be deleted after you exit.*

- [5] The SCP will prompt the subscriber with the Enter Single Address Menu to ask for the new destination address to be delivered to. After the subscriber enters the new destination address, the SCP will play the following to confirm, and then move on to play the next message, and the returned message will be automatically deleted.

- [2754] This message will be delivered again after you exit.*
- [6] The SCP will go back to play the previous message. The current message will remain as a new message. If this is the first message in the queue, the SCP will play the following prompt and then go back to the Mailbox Main Menu.  
*[2716] This is your first message.*
- [0] The SCP will play the message envelope and then prompt for the End Of Returned Voice Message Menu again (see section “End of Voice Message Menu” above).
- [#] The SCP will move on to play the next message. The current message will remain as a new message. If there are no more new voice messages, the new fax messages and/or email will be played. If there are no more new messages, the SCP will play the following prompt and then go back to the Mailbox Main Menu.  
*[0057] All messages have been retrieved.*
- [\*] The subscriber will be returned to the Mailbox Main Menu.

## 2.3.7 Record Menu

When the subscriber is prompted by the SCP to record something (memo, Personal Greeting, etc.), the same user interface is maintained.

*[0017] Please begin speaking after the tone. When you have finished recording, press any key to continue.*

The SCP then plays the “beep” to signal the subscriber to start recording. During recording, the subscriber can press any key to stop the recording, and the SCP will prompt for the End Of Recording Menu.

### 2.3.7.1 End Of Recording Menu

When the subscriber presses any key to stop the recording, he will be presented with the following.

- [0016] To confirm, press 1.  
To re-record, press 2.  
To replay, press 3.  
To cancel, press 4.  
To continue recording, press 5.*
- [1] The recording will be accepted. The SCP will continue with the current menu sequence at the point after the recording session is invoked.
- [2] The recording will be discarded, and the subscriber will be prompted to start recording again.  
*[0018] Recording erased.  
[0017] Please begin speaking after the tone. When you have finished recording, press any key to continue.*
- [3] The system will replay the recording once and then prompt for the End Of Recording Menu again.
- [4] The recording session will be canceled, and the SCP will play,  
*[0018] Recording erased.*



The SCP will return to the current menu sequence at the point before the recording session is invoked.

- [5] The SCP will play the following prompt and the caller can resume recording after the beep. The previous recording that was interrupted will not be lost, and will be appended with the new recording.

*[2799] Please continue recording after the tone. When you have finished recording, press any key to continue.*

## 2.3.8 Record Message Menu

When the subscriber is prompted by the SCP to record a message, the same user interface is maintained.

*[3008] Please begin speaking after the tone. When you have finished recording, you may hang up to deliver the message or press any key for more options.*

*[2822] To send a fax, press the START button on your fax machine.*

The SCP will then play a “beep” to signal the caller to start recording. At the end of the recording, the caller can hang up and the message will be delivered. If the caller presses any key to stop the recording, he will be presented with the End of Record Message Menu.

If the caller is calling from a fax machine and presses the START button after the recording, the SCP will detect the fax tone sent by the fax machine and turn on fax receiving. The received fax then becomes a fax message, with the voice recording as attached voice memo.

If the caller is calling from a fax machine and presses the START button before the “beep”, the SCP will detect the presence of the fax tone generated by the originating fax machine, and immediately turn on fax receiving without any voice recording. The received fax then becomes a fax message without attached voice memo.

Some fax machines do not generate the fax tone, even upon pressing the START button. To accommodate these types of fax machine, the caller can press [7] to initiate fax transmission. If the caller presses [7] before the “beep”, the SCP will immediately turn on fax receiving. If the caller presses [7] after the “beep”, the voice recording is stopped and he will be presented with the End of Record Message Menu, at which point he can press option [7] and the SCP will turn on fax receiving.

### 2.3.8.1 End Of Record Message Menu

When the subscriber presses any key to stop the recording, he will be presented with the following.

*[3003] To send the message now, press 1.*

*To re-record, press 2.*

*To replay, press 3.*

*To cancel, press 4.*

*To continue recording, press 5.*

*[3005] To send with a fax, press 6.*

*[3004] To set Voice Anywhere delivery options, press 7.*

Prompt [3004] will be played only if the destination is not a mailbox and Voice Anywhere option is enabled for this subscriber.

- [1] The recorded message will be delivered. The SCP will continue with the current menu sequence at the point after the recording session is invoked.

- [2720] *This message will be delivered after you exit.*
- [2] The recording will be discarded, and the subscriber will be prompted to start recording again.  
[0018] *Recording erased.*  
[0017] *Please begin speaking after the tone. When you have finished recording, press any key to continue.*
- [3] The system will replay the recording once and then prompt for the End Of Record Message Menu again.
- [4] The recording session will be canceled, and the SCP will play,  
[0018] *Recording erased.*  
The SCP will return to the current menu sequence at the point before the recording session is invoked.
- [5] The SCP will play the following prompt and the caller can resume recording after the beep. The previous recording that was interrupted will not be lost, and will be appended with the new recording.  
[2799] *Please continue recording after the tone. When you have finished recording, press any key to continue.*  
Note that in case the caller has exceeded the maximum recording time, this option will not be available.
- [6] The SCP will play the following prompt to signal the caller to start the fax transmission.  
[2858] *Please press the START button on the fax machine now .*  
The caller can then hang up and the fax message together with the voice memo will be delivered. Some fax machines do not generate the fax tone, even upon pressing the START button. To accommodate these types of fax machine, the SCP will automatically start the fax receiving mode shortly after prompting the caller to press the START button.
- [7] The recording will be accepted. The SCP will then prompt for the Voice Anywhere Delivery Option Menu. If the subscriber records a recipient name, it will be played even if there are multiple Voice Anywhere destinations. When the subscriber has selected the delivery option, the SCP will prompt for the End Of Record Message Menu again.

Note that in the case of Express Send, option 6 is not available and prompt 2953 will not be played.

## 2.3.9 Enter Single Address Menu

The subscriber is presented with this menu for specifying a single destination mailbox or telephone number for message delivery or forwarding.

- [2718] *Enter the destination telephone number.*  
[2706] *For a domestic long distance number, dial...*  
*...<domestic long distance access code>...*  
[2902] *...,area code, and telephone number.*  
[2788] *For an international number, dial...*  
*...<international access code>...*  
[2910] *...,country code, and telephone number.*  
[3024] *To cancel, press \*.*

The subscriber enters the mailbox ID if the destination mailbox is a local mailbox. If the destination requires a long distance call, the subscriber precedes the number with the long distance access code and country code information in the same way that he enters a long distance telephone number. Note that prompt [2706] will only be played if a domestic long distance access code is required.

After the subscriber enters the destination number, the SCP will check whether this is a valid number, based on the country code and the expected number of digits. If it is not a valid number, or if it is a valid number but not a mailbox number and the subscriber does not have Voice Anywhere feature enabled, the SCP will play the following and prompt for the destination number again.

*[2020] We're sorry, we cannot recognize this number.*

If the subscriber has entered a valid number, the SCP will play the following to confirm.

*[0579] You have entered...<recorded name>.*

Or *[0579] You have entered...<destination telephone number>.*

Or if the number entered is an international number, and there is a SCP covering that country,

*[0579] You have entered...<destination telephone number>.*

*[2708] ... of ...<SCP name>*

*[0528] If this is correct, press 1.*

*If not, press 2.*

[1] The specified telephone number will be accepted. The SCP will continue with the current menu sequence at the point after the Enter Single Address Menu is invoked.

[2] The specified telephone number will be canceled. The SCP will prompt for the Enter Single Address Menu again.

If the subscriber presses a single digit ("0" – "9") followed by "#", the SCP will check whether the entered digit corresponds to a personal phone list entry of the subscriber. If so, the number set up in the personal phone list entry will be used,.

If the subscriber presses [\*] after partially entering the address information, the digits entered so far will be discarded, and the SCP will prompt for the Enter Single Address Menu again. If the subscriber presses [\*] without any digit input, the SCP will return to the menu sequence at the point before the Enter Single Address Menu would be invoked.

## 2.3.10 Enter Multiple Address Menu

The subscriber is presented with this menu for specifying a single destination mailbox or telephone number for message delivery or forwarding.

*[2718] Enter the destination telephone number.*

*[2706] For a domestic long distance number, dial...*

*...<domestic long distance access code>...*

*[2902] ...,area code, and telephone number.*

*[2788] For an international number, dial...*

*...<international access code>...*

*[2910] ...,country code, and telephone number.*

*[3024] To cancel, press \*.*

The subscriber enters the mailbox ID if the destination mailbox is a local mailbox. If the destination requires a long distance call, the subscriber precedes the number with the long distance access code and country code information in the same way that he enters a long distance telephone number. Note that prompt [2706] will only be played if a domestic long distance access code is required.

After the subscriber enters the destination number, the SCP will check whether this is a valid number, based on the country code and the expected number of digits. If it is not a valid number, or if it is a valid number but not a mailbox number and the subscriber does not have Voice Anywhere feature enabled, the SCP will play the following and prompt for the destination number again.

*[2020] We're sorry, we cannot recognize this number.*

If the subscriber has entered a valid number, the SCP will play the following to confirm.

*[0579] You have entered...<recorded name>.*

Or *[0579] You have entered...<destination telephone number>.*

Or if the number entered is an international number, and there is a SCP covering that country,

*[0579] You have entered...<destination telephone number>.*

*[2708] ... of ...<SCP name>*

*[3025] To confirm, press 1.*

*To re-enter, press 2.*

*To confirm and enter more numbers, press 3.*

- [1] The specified telephone number will be accepted. The SCP will continue with the current menu sequence at the point after the Enter Multiple Address Menu is invoked.
- [2] The specified telephone number will be canceled. The SCP will prompt for the Enter Multiple Address Menu again.
- [3] The specified telephone number will be accepted. The SCP will prompt for the Enter Subsequent Address Menu again.

If the subscriber presses a single digit ("0" – "9") followed by "#", the SCP will check whether the entered digit corresponds to a personal phone list entry of the subscriber. If so, the number set up in the personal phone list entry will be used,.

If the subscriber presses [\*] after partially entering the address information, the digits entered so far will be discarded, and the SCP will prompt for the Enter Multiple Address Menu again. If the subscriber presses [\*] without any digit input, the SCP will return to the menu sequence at the point before the Enter Multiple Address Menu would be invoked.

If the first number is not entered, the SCP will continue with the current menu sequence at the point before the Enter Multiple Address Menu is invoked.

## 2.3.10.1 Enter Subsequent Address Menu

The subscriber is presented with this menu to specify the next destination for message delivery or forwarding.

*[3009] Enter the next destination telephone number.*

*To cancel, press \*.*

The subscriber enters the mailbox ID if the destination mailbox is a local mailbox. If the destination requires a long distance call, the subscriber precedes the number with the long distance access code and country code information in the same way that he enters a long distance telephone number.

After the subscriber enters the destination number, the SCP will check whether this is a valid number, based on the country code and the expected number of digits. If it is not a valid number, or if it is a valid number

but not a mailbox number and the subscriber does not have Voice Anywhere feature enabled, the SCP will play the following and prompt for the destination number again.

*[2020] We're sorry, we cannot recognize this number.*

If the subscriber has entered a valid number, the SCP will play the following to confirm.

*[0579] You have entered...<recorded name>.*

Or *[0579] You have entered...<destination telephone number>.*

Or if the number entered is an international number, and there is a SCP covering that country,

*[0579] You have entered...<destination telephone number>.*

*[2708] ... of ...<SCP name>*

*[3025] To confirm, press 1.*

*To re-enter, press 2.*

*To confirm and enter more numbers, press 3.*

- [1] The specified telephone number will be accepted. The SCP will continue with the current menu sequence at the point after the Enter Subsequent Address Menu is invoked.
- [2] The specified telephone number will be canceled. The SCP will prompt for the Enter Subsequent Address Menu again.
- [3] The specified telephone number will be accepted. The SCP will prompt for the Enter Subsequent Address Menu again.

If the subscriber presses a single digit ("0" – "9") followed by "#", the SCP will check whether the entered digit corresponds to a personal phone list entry of the subscriber. If so, the number set up in the personal phone list entry will be used.

If the subscriber presses [\*] after partially entering the address information, the digits entered so far will be discarded, and the SCP will prompt for the Enter Subsequent Address Menu again. If the subscriber presses [\*] without any digit, the SCP will continue with the current menu sequence at the point after the Enter Subsequent Address Menu is invoked.

## 2.3.11 Enter Phone Number Menu

The subscriber is presented with this menu for specifying a telephone number for outcalling.

*[2553] Enter the telephone number.*

*[2706] For a domestic long distance number, dial...*

*...<domestic long distance access code>...*

*[2902] ...,area code, and telephone number.*

*[2788] For an international number, dial...*

*...<international access code>...*

*[2910] ...,country code, and telephone number.*

*[0418] To quit, press \*.*

The subscriber enters the telephone number if it is a local number. If the destination requires a long distance call, the subscriber precedes the number with the long distance access code and country code information in the same way that he enters a long distance telephone number. Note that prompt [2706] will only be played if a domestic long distance access code is required.

After the subscriber enters the destination number, the SCP will check whether this is a valid number, based on the country code and the expected number of digits. If it is not a valid number, the SCP will play the following and prompt for the destination number again.

*[2020] We're sorry, we cannot recognize this number.*

If the subscriber has entered a local number that is blocked for outcalling, or is longer than the **Maximum Number of Outcalling Digits** specified in the subscriber's class of service, the SCP will play the following and prompt for the destination number again.

*[3010] We're sorry, this number cannot be used.*

If the subscriber has entered a valid number, the SCP will play the following to confirm.

*[0579] You have entered...<destination telephone number>.*

*[0528] If this is correct, press 1.*

*If not, press 2.*

- [1] The specified telephone number will be accepted. The SCP will continue with the current menu sequence at the point after the Enter Phone Number Menu is invoked.
- [2] The specified telephone number will be canceled. The SCP will prompt for the Enter Phone Number Menu again.

If the subscriber presses [\*] after partially entering the address information, the digits entered so far will be discarded, and the SCP will prompt for the Enter Phone Number Menu again. If the subscriber presses [\*] without any digit input, the SCP will return to the menu sequence at the point before the Enter Phone Number Menu would be invoked.

## 2.3.12 Retrieving New Fax Messages Menu

When the subscriber presses [4] at the Mailbox Main Menu, or after all the new voice messages have been played, the SCP will play the new fax messages. The SCP first prompts the subscriber whether he wants to review the individual fax messages, or to print out the fax document associated with all the fax messages.

*[2914] To retrieve individual fax messages, press 1.*

*To print all the fax, press 2.*

If the subscriber presses [1] to retrieve individual fax messages, the SCP will successively play the header information of all of the new fax messages. If there is a voice memo associated with the fax message, it will be played after the header. Messages are played in chronological order in which they arrive at the mailbox.

*[2721] Fax message...<N>*

if the message was sent by an outside fax machine, no special prompt is played,  
or if the message was sent by another local subscriber,

*[0512] ...from...*

*...<originating subscriber's name>*

or if the message was sent by another local subscriber who does not have a recorded name,

*[0512] ...from...*

*[2045] Mailbox...<mailbox number>*

or if the message was sent by a subscriber from a remote SCP,

*[0512] ...from...*

*[2045] Mailbox...<mailbox number>*

*[2708] ...of...<SCP name>*

or if the message was sent by a subscriber from a remote CCP,

*[0512] ...from...*

[2045] Mailbox...<mailbox number>  
 [2708] ...of...  
 [2709] Node...<node ID>  
  
 [2722] ...has...<one>  
 [2723] ...page.  
 or,  
 [2722] ...has...<N>  
 [2724] ...pages.  
  
 ...<voice memo>...

As for a voice message, a fax message might have various characteristics associated with it. See the section on "Retrieving New Messages."

A fax message that was delivered or forwarded by the subscriber might have failed to reach the destination mailbox (local or remote). In this case, the original message will be returned to the subscriber's mailbox as new message, and the SCP will play the following to alert the subscriber. If the message was delivered or forwarded to multiple destination mailboxes, all the destination mailboxes that failed to receive the message and the respective reason of failure will be announced. If there was a voice memo recorded for the fax message, it will be played to help the subscriber to identify the fax message.

[2725] *The following fax message could not be delivered to...*

The SCP will inform the subscriber about the destination of failure and reason. See the section on "Retrieving New Messages."

At the end of each individual fax message playback, the subscriber will be prompted for the End of Fax Message Menu.

If the subscriber presses [2] to print all the fax, the SCP will prompt the subscriber to choose the one-call or two-call method.

[0803] *If you are calling from a fax machine, press 1.*  
 [3011] *To send to a fax machine, press 2.*  
       *To use automatic fax delivery, press 3.*  
       *To quit, press \*.*

- [1] If the subscriber chooses the one-call method, the SCP will prompt the following and then play the fax tone to signal the subscriber to start the fax transmission.

[2858] *Please press the START button on the fax machine now.*

When all the fax documents have been transmitted, the call will be terminated.

- [2] The SCP will prompt for the Enter Phone Number Menu for the telephone number of the fax machine. After the subscriber enters the correct telephone number, the SCP will play the following to confirm the fax delivery.

[0812] *Your fax message will be printed after you exit.*

After that, the subscriber will be returned to the Mailbox Main Menu.

- [3] The SCP will use the automatic fax delivery number for the two-call fax delivery, and will play the following to confirm.

[0812] *Your fax message will be printed after you exit.*

After that, the subscriber will be returned to the Mailbox Main Menu.

If the subscriber has previously pressed [2] and entered a fax number for any two-call fax during the same call, the SCP will not ask for the telephone number again for any subsequent two-call delivery, but will use the entered number instead.

Note that once the subscriber chooses to print out the fax document, the corresponding fax message will be automatically saved as a saved fax message. Otherwise, it will remain as a new fax message, unless explicitly deleted by the subscriber.

## 2.3.13 End Of Fax Message Menu

At the end of a fax message playback, the subscriber has the following options.

- [2764] To print the fax, press 1.*
- [2742] To reply, press 2.*
- [2756] To replay, press 3.*
- To delete, press 4.*
- To forward, press 5.*
- To go back to the previous message, press 6.*
- To play the time stamp, press 0.*
- To skip to the next message, press #.*
- To quit, press \*.*

The Reply option will only be prompted if the sender of the message is a subscriber, including subscriber from a remote SCP or CCP. Also, the option will not be available if the message is a return from failed delivery.

- [1] The SCP will prompt the subscriber to choose the one-call or two-call method.
  - [0803] If you are calling from a fax machine, press 1.*
  - [3011] To send to a fax machine, press 2.*
  - To use automatic fax delivery, press 3.*
  - To quit, press \*.*
- [1] If the subscriber chooses the one-call method, the SCP will prompt the following and then play the fax tone to signal the subscriber to start the fax transmission.
  - [2858] Please press the START button on the fax machine now.*When the entire fax document has been transmitted, the call will be terminated.
- [2] If the subscriber chooses the two-call method, the SCP will prompt for the Enter Phone Number Menu for the telephone number of the fax machine. After the subscriber enters the correct telephone number, the SCP will play the following to confirm the fax delivery.
  - [0812] Your fax message will be printed after you exit.*After that, the SCP will go on to play the next message.
- [3] The SCP will use the automatic fax delivery number for the two-call fax delivery, and will play the following to confirm.
  - [0812] Your fax message will be printed after you exit.*After that, the SCP will go on to play the next message.
- [\*] The subscriber will be returned to the End Of Fax Message Menu.



If the subscriber has previously entered a fax number for any two-call fax or e-mail delivery during the same call, the SCP will not ask for the telephone number again for any subsequent two-call delivery, but will use the entered number instead.

If the subscriber has previously chosen the print option for another fax message, and has selected the telephone number for two-call fax delivery, any subsequent print fax options within this call will be executed with the same set up. The SCP will not play prompts 0803 and 3011 anymore, but will directly play prompt 0812, and then go on to play the next message.

Note that once the subscriber chooses to print out the fax, the fax message will be automatically saved as a saved fax message. Otherwise, it will remain as a new fax message, unless explicitly deleted by the subscriber.

- [2] The subscriber will be presented with the Record Menu for recording a reply message to be sent to the sender. After the subscriber has finished recording, the SCP will play the following to confirm, and then return to the End Of Fax Message Menu.  
*[2715] Your reply will be delivered after you exit.*

- [3] The SCP will replay the message and then prompt for the End Of Fax Message Menu again.

- [4] The SCP will delete the message, play the following prompt, and then move on to play the next message in the queue.  
*[0055] This message will be deleted after you exit.*

- [5] The SCP will play the following to prompt the subscriber to record a voice memo to be appended at the front of the forwarded message.

*[2916] Please record a voice memo for the forwarding message.*

The subscriber will then be presented with the Record Message Menu for recording a memo. A voice memo is always required for a forwarded message. However, the subscriber can avoid recording a voice memo by pressing any key to terminate the recording, then pressing [4] to cancel recording.

The subscriber will then be prompted for the Enter Multiple Address Menu to specify the destination mailbox(es) to be forwarded to. The SCP then plays the following to confirm the message forwarding.

*[0304] This message will be forwarded after you exit.*

After that, the subscriber will be returned to the End Of Fax Message Menu.

- [6] The SCP will go back to play the previous message. The current message will remain as a new message. If this is the first message in the queue, the SCP will play the following prompt and then go back to the Mailbox Main Menu.  
*[2716] This is your first message.*

- [0] The SCP will play the message envelope and then prompt for the End Of Fax Message Menu again. The message envelope information is the same as that for the voice message. See the section "End of Voice Message Menu".

- [#] The SCP will move on to play the next message. The current message will remain as a new message. If there are no more new fax messages, the new email will be played (if the subscriber was using the Play All Messages option). If there are no more new messages, the SCP will play the following prompt and then go back to the Mailbox Main Menu.  
*[0057] All messages have been retrieved.*

- [\*] The subscriber will be returned to the Mailbox Main Menu.

### 2.3.13.1 End Of Returned Fax Message Menu

At the end of a fax message playback, if the message is a return from failure of delivery, the subscriber has the following options.

- [2755] To print the fax, press 1.*
- To send again, press 2.*
- To replay, press 3.*
- To delete, press 4.*
- To send to a different destination, press 5.*
- To go back to the previous message, press 6.*
- To play the time stamp, press 0.*
- To skip to the next message, press #.*
- To quit, press \*.*

The user interface is similar to that of the End of Fax Message Menu, except for options [2] and [5], which are similar to that of the End of Returned Voice Message Menu.

### 2.3.14 Reviewing E-mail

When the subscriber presses [5] at the Mailbox Main Menu, or after all the new voice and fax messages have been played, the SCP will play the new e-mail. The SCP will successively play all the e-mail headers.

- [2771] E-mail sent by... <sender's e-mail address>*
- [0041] ...was received on...*  
*<date and time>*

#### 2.3.14.1 End Of E-mail Menu

At the end of a e-mail header playback, the subscriber has the following options.

- [2778] To print the e-mail, press 1.*
- To replay, press 3.*
- To delete, press 4.*
- To go back to the previous e-mail, press 6.*
- To skip to the next e-mail, press #.*
- To quit, press \*.*

- [1] The e-mail contents will be printed to a designated fax machine. Only two-call method is supported.

- [3011] To send to a fax machine, press 2.*
- To use automatic fax delivery, press 3.*
- To quit, press \*.*

- [2] If the subscriber chooses the two-call method, the SCP will prompt for the Enter Phone Number Menu for the telephone number of the fax machine. After the subscriber enters the correct telephone number, the SCP will play the following to confirm the fax delivery.

*[2727] The e-mail contents will be faxed to you after you exit.*

After that, the SCP will go on to play the next message.

- [3] The SCP will use the automatic fax delivery number for the two-call fax delivery, and will play the following to confirm.

*[2727] The e-mail contents will be faxed to you after you exit.*

After that, the SCP will go on to play the next message.

- [\*] The subscriber will be returned to the End Of E-mail Menu.

If the subscriber has previously entered a fax number for any two-call fax or e-mail delivery during the same call, the SCP will not ask for the telephone number again for any subsequent two-call delivery, but will use the entered number instead.

If the subscriber has previously chosen the print option for another fax message or email, and has selected the telephone number for two-call fax delivery, any subsequent print email options within this call will be executed with the same set up. The SCP will not play prompt 2950 anymore, but will directly play prompt 2727, and then go on to play the next message.

Note that once the subscriber chooses to print out the e-mail as fax, it will be automatically saved as a saved fax message. Otherwise, it will remain as a new e-mail header, unless explicitly deleted by the subscriber.

- [3] The SCP will replay the e-mail header and then prompt for the End Of E-mail Menu again.
- [4] The SCP will delete the e-mail header, play the following prompt, and then move on to play the next e-mail header in the queue.  
*[0055] This message will be deleted after you exit.*
- [6] The SCP will go back to play the previous e-mail header. If this is the first e-mail header in the queue, the SCP will play the following prompt and then go back to the Mailbox Main Menu.  
*[2716] This is your first message.*
- [#] The SCP will move on to play the next e-mail header. If there are no more e-mail header, the SCP will play the following prompt and then go back to the Mailbox Main Menu.  
*[0057] All messages have been retrieved.*
- [\*] The subscriber will be returned to the Mailbox Main Menu.

## 2.3.15 Retrieving Saved Messages

When the subscriber presses [6] at the Mailbox Main Menu to retrieve the saved messages, he will be prompted to choose between voice messages or fax messages.

*[2912] To play your saved voice messages, press 1.*

*[2913] To retrieve your saved fax messages, press 2.*

*[0418] To quit, press \*.*

Prompt [2912] or prompt [2913] may not be played if there is no saved voice messages or no saved fax messages.

- [1] The SCP will first inform the number of saved voice messages, and then successively play all of the saved voice messages. Messages are played in chronological order in which they were saved in the mailbox. All the characteristics of the original message are kept.  
*[0032] You have... <one>*

[0035] ...saved message.  
or,  
[0032] You have...<N>  
[0036] ...saved messages.  
[0039] Message...<N>  
...<message contents>...

The same play message control functions are available. Similarly, the same end-of-message options apply, except that the "Save" option is not available.

[2742] To reply, press 2.  
[2756] To replay, press 3.  
To delete, press 4.  
To forward, press 5.  
To go back to the previous message, press 6.  
To play the time stamp, press 0.  
To skip to the next message, press #.  
To quit, press \*.

If the saved message is a returned message, the following options are available.

[2786] To send again, press 2.  
To replay, press 3.  
To delete, press 4.  
To send to a different destination, press 5.  
To go back to the previous message, press 6.  
To play the time stamp, press 0.  
To skip to the next message, press #.  
To quit, press \*.

- [2] The SCP will first inform the number of saved fax messages, and then successively play all of the saved fax messages. Messages are played in chronological order in which they were saved in the mailbox. All the characteristics of the original message are kept.

[0032] You have...<one>  
[0809] ...saved fax message.  
or,  
[0032] You have...<N>  
[0810] ...saved fax messages.  
[2721] Fax message...<N>  
[2944] Message ID...<4-digit message ID>  
[2722] ...has...<one>  
[2723] ...page.  
or,  
[2722] ...has...<N>  
[2724] ...pages.  
...<voice memo>...

The same play message control functions and end-of-message options are available.

[2764] To print the fax, press 1.  
[2742] To reply, press 2.  
[2756] To replay, press 3.  
To delete, press 4.  
To forward, press 5.  
To go back to the previous message, press 6.  
To play the time stamp, press 0.  
To skip to the next message, press #.  
To quit, press \*.

If the saved message is a returned message, the following options are available.

- [2755] To print the fax, press 1.*
- To send again, press 2.*
- To replay, press 3.*
- To delete, press 4.*
- To send to a different destination, press 5.*
- To go back to the previous message, press 6.*
- To play the time stamp, press 0.*
- To skip to the next message, press #.*
- To quit, press \*.*

[\*] The subscriber will be returned to the Mailbox Main Menu.

When printing the fax document of a saved fax message, the subscriber has the option to print the entire fax document, or only the specified pages. The SCP will prompt for the following.

- [2784] To print the entire fax, press #.*
- Otherwise enter the first page number followed by #.*

If the subscriber presses [#] for printing the entire fax document, the SCP will proceed to ask the subscriber to choose the one-call call or two-call method. If the subscriber enters a number followed by [#], the SCP will interpret it as the first page number, and will prompt for the following.

- [2785] Enter the last page number followed by #.*
- To print this page only, just press #.*

If the subscriber enters a number followed by [#], the SCP will only print the pages from the first page to the last page. If the subscriber presses [#] without the last page number, the SCP will only print the single page that corresponds to the first page number entered. The SCP will then prompt the subscriber to choose the one-call or two-call method.

## 2.3.16 Send Message Menu

The subscriber can press [2] at the Mailbox Main Menu to send a voice message or a fax. The subscriber does not need to know a priori whether he is sending to another subscriber or to a non-subscriber, but will just enter the local or long distance telephone number of the recipient. If the destination telephone number is a mailbox ID, the message will be delivered to the corresponding mailbox within the same SCP or at a remote SCP via remote message delivery. Otherwise the message will be delivered through the Voice Anywhere or Fax Anywhere service.

The SCP first prompts the subscriber with the Enter Multiple Address Menu to specify the destination. After that the SCP will prompt the subscriber with the Record Message Menu for recording the message. At the end of the recording, the subscriber can hang up and the message will be delivered, or he can press the START button to start the fax transmission. If the subscriber presses any key to stop and revise the recording, he will be returned to the Mailbox Main Menu.

If the subscriber records a voice memo for a fax, but the destination is not to another mailbox, the fax will be delivered via Fax Anywhere, and the voice memo will be discarded.

In the case that a fax port is not available, the SCP will play the following error message and then prompt for the Send Message Menu again.

- [0824] We're sorry, there are no fax lines available at this time. Please try again later.*

## 2.3.16.1 Voice Anywhere Delivery Option Menu

At the End of Record Message Menu, if the subscriber selects delivery options, he will be presented with the Voice Anywhere Delivery Option Menu.

- [2743] To deliver this message now, press #.*
- To record the recipient's name, press 1.*
- To set the destination delivery time, press 2.*
- To allow reply message, press 3.*
- To enter a password for this message, press 4.*
- To cancel delivery options, press \*.*

- [#] The SCP will set up to deliver the voice message, and the subscriber is returned to the Remote Delivery Menu.

*[2720] This message will be delivered after you exit.*

- [1] The SCP will prompt the subscriber to record the name of the recipient.

*[2765] Please record the name of the receiving person after the beep. When you are finished, press any key to continue.*

The SCP then plays the beep to signal the subscriber to record the recipient's name, and then prompt for the End of Recording Menu. When the subscriber has finished recording the recipient's name, the SCP will return to the Voice Anywhere Delivery Option Menu.

- [2] The SCP will prompt the subscriber to enter the destination local delivery time.

*[2745] Enter the AM/PM mode for the delivery time.*

*For AM, press 1.*

*For PM, press 2.*

*To quit, press \*.*

The subscriber selects the AM/PM mode for the delivery by entering the corresponding number. The SCP then prompts for the time selection.

*[2746] Enter the delivery time for this message.*

*Enter two digits for the hour, two digits for the minutes, followed by #.*

*To quit, press \*.*

The subscriber enters the delivery time by entering the corresponding value. The system echoes the time and then returns to the Voice Anywhere Delivery Option Menu.

*[2747] The message will be delivered at...<selected delivery time>...*

*[2905] ...destination time.*

- [3] The SCP will play the following and then return to the Voice Anywhere Delivery Option Menu.

*[2748] The receiving party can reply to this message.*

- [4] The SCP will prompt the subscriber to enter the password for this message.

*[2744] Enter a password no longer than 8 digits.*

*To quit, press \*.*

After the subscriber enters the password, the SCP will echo the password, and then return to the Voice Anywhere Delivery Option Menu.

*[0579] You have entered...<password>.*

- [\*] All the specified delivery options will be canceled. The SCP will play the following and continue with the current menu sequence at the point before the Voice Anywhere Delivery Option Menu would be invoked.

*[2791] All delivery options have been cancelled.*

## 2.3.17 Mailbox Options Menu

When the subscriber presses [3] at the Mailbox Main Menu to change the mailbox options, he is prompted for the Mailbox Option Menu.

- [2502] To change your mailbox profile, press 1.*
- [3026] To check your current balance or add credit, press 2.*
- [2707] To change Virtual Mailbox options, press 3.*
- [2918] To change your outcalling options, press 4.*
- [2792] To change automatic fax delivery, press 5.*
- [0418] To quit, press \*.*

If the subscriber presses [\*] to quit, he is returned to the Mailbox Main Menu.

### 2.3.17.1 Mailbox Profile Menu

When the subscriber presses [1] at the Mailbox Option Menu, the SCP will present with the following menu.

- [2917] To change your greeting, press 1.*
- To change your password, press 2.*
- To change your name recording, press 3.*
- To change personal phone list, press 4.*
- To change your preferred language, press 5.*

#### 2.3.17.1.1 Change Greeting Menu

When the subscriber presses [1] at the Mailbox Profile Menu, the SCP will prompt for the following.

- [0059] To listen to your greeting, press 1.*
- To record a new greeting, press 2.*
- To change to the system greeting, press 3.*
- To quit, press \*.*

- [1] The SCP will play the current greeting, and then prompt for the Change Greeting Menu again. If no greeting has been recorded, the following default system greeting will be played:

*[2045] Mailbox ... <Mailbox number>*

- [2] The subscriber will be presented with the Record Menu for recording a new greeting. After that, the new greeting will be in effect, and the subscriber is returned to the Change Greeting Menu.

- [3] The SCP will discard the current greeting and switch back to the default system greeting. The SCP will play the following prompt, and then prompt for the Change Greeting Menu.

*[0065] Your greeting has been changed to the system greeting.*

- [\*] The SCP will continue with the current menu sequence at the point before the Change Greeting Menu is invoked.

### 2.3.17.1.2 Change Mailbox Password Menu

When the subscriber presses [2] at the Mailbox Profile Menu, the SCP will prompt for the new password.

*[0066] Enter your new password followed by #.  
The password must be no longer than 8 digits.  
To quit, press \*.*

After the subscriber enters the new password, the SCP will prompt the subscriber to enter again to confirm.

*[0067] Enter your new password again followed by #.  
To quit, press \*.*

If the subscriber enters the same new password again, the new password will become effective. The SCP will play the following prompt, and the subscriber will be returned to the Mailbox Option Menu.

*[0068] Your password has been changed.*

If the subscriber enters the two passwords that do not match, the old password will remain effective. The SCP will play the following prompt, and the subscriber will be returned to the Mailbox Option Menu.

*[0069] Your password is not changed because your new passwords do not match.*

If the subscriber presses [\*] to cancel, the old password will remain effective. The subscriber will be returned to the Mailbox Option Menu.

### 2.3.17.1.3 Change Name Recording Menu

When the subscriber presses [3] at the Mailbox Profile Menu, he is prompted for the Change Name Recording Menu.

*[1421] To listen to your name recording, press 1.  
To record your name, press 2.  
To delete your name recording, press 4.  
To quit, press \*.*

[1] The SCP will play the current name recording, and then prompt for the Change Name Recording Menu again. If there is currently no recorded name, the SCP will play the following.

*[2045] Mailbox...<mailbox number>*

[2] The subscriber will be presented with the Record Menu for recording a name. After that, the new recorded name will be in effect, and the subscriber is returned to the Change Name Recording Menu.

[4] The SCP will discard the current name recording and switch back to the default mailbox number prompt. The SCP will play the following prompt, and then prompt for the Change Name Recording Menu.

*[2757] This mailbox now has no name recording.*

[\*] The subscriber will be returned to the Mailbox Option Menu.

### 2.3.17.1.4 Change Personal Phone List Menu

When the subscriber presses [4] at the Mailbox Profile Menu, he is prompted for the Change Personal Phone List Menu.

*[2919] Enter the phone list entry number followed by #.  
To quit, press \*.*



If the subscriber presses '\*' to quit, he will return to the Mailbox Option Menu. Otherwise, the subscriber selects the particular phone list entry (1 – 9) to review or change. The SCP will inform the current setting of this entry and then prompt for the following:

[2930] *This entry is used for <phone list contents>*  
[2920] *To change this entry, press 1.*  
*To delete this entry, press 2.*  
*To quit, press \*.*

or,

[2931] *This entry is not used.*  
*To change this entry, press 1.*  
*To quit, press \*.*

[1] The SCP will prompt the subscriber with the Enter Single Address Menu to specify the destination mailbox ID or telephone number to be used for this entry. After the subscriber confirms the change, the SCP will return to the Change Personal Phone List Menu to prompt for the next personal phone list entry to change.

[2] The SCP will prompt the subscriber to confirm the deletion.

[2932] *This entry will be deleted.*  
[0528] *If this is correct, press 1.*  
*If not, press 2.*

After the subscriber confirms the change, the SCP will return to the Change Personal Phone List Menu to prompt for the next personal phone list entry to change.

### 2.3.17.1.5 Change Preferred Language Menu

When the subscriber presses [5] at the Mailbox Profile Menu, he is prompted for the Change Preferred Language Menu.

[3012] *Enter the new preferred language selection.*  
[3017] *To use <language 1>...*  
[3019] *Press <1>.*  
[3017] *To use <language 2>...(in language 2)*  
[3019] *Press <2>.*  
[3017] *To use <language 3>...(in language 3)*  
[3019] *Press <3>.*  
[0418] *To quit, press \*.*

If the subscriber enters a valid number, the SCP will play the following prompt in the new language, and then returns to the Mailbox Option Menu.

[3013] *Your preferred language has been changed. (in the newly chosen preferred language)*

If the subscriber presses '\*' to quit, he will return to the Mailbox Option Menu.

### 2.3.17.2 Check Balance or Add Credit Menu

When the subscriber presses [2] at the Mailbox Option Menu, the subscriber is presented with the following menu:

[2793] *To check your current balance or credit, press 1.*  
*To add credit to your account, press 2.*

- [1] The subscriber's current balance or remaining credit will be played.

For subscribers without prepaid charge, the following will be played.

[2798] *Your current balance is...*

[2900] *...<dollar amount>...dollars...*

[2901] *...<cent amount>...cents.*

Or, for subscribers with prepaid charge remaining, the following will be played.

[2909] *Your current credit is...*

[2900] *...<dollar amount>...dollars...*

[2901] *...<cent amount>...cents.*

Then, if there is an expiration date for the mailbox account, the SCP will also play

[3014] *Your account will expire on...<expiration date>*

If there is no expiration date, then no prompt will be played.

- [2] The subscriber will be presented with the Enter Prepaid Card Number Menu.

### 2.3.17.2.1 Enter Prepaid Card Number Menu

The subscriber is prompted to enter a prepaid card number

[3027] *Please enter your fourteen-digit prepaid card number.*

*When you have finished, press #.*

*To cancel, press \*.*

The subscriber is allowed to have two failure attempts to enter the number. If the entered prepaid card number is invalid, the SCP will play

[3028] *The number you have entered is invalid.*

*Please try again or press \* to cancel.*

If the third attempts of the prepaid card number is still invalid, the SCP will play

[3029] *Sorry, we cannot recognize that number.*

*Please try again later.*

[0042] *Goodbye*

The SCP should disconnect the call.

If the entered prepaid card number is valid, the SCP will play

[3022] *Thank you. Your new credit is...*

[2900] *...<dollar amount>...dollars...*

[2901] *...<cent amount>...cents.*

Then, if there is an expiration date for the mailbox account, the SCP will also play

[3014] *Your account will expire on...<expiration date>*

If there is no expiration date, then no prompt will be played.

If the subscriber presses [\*] after partially entering the address information, the digits entered so far will be discarded, and the SCP will prompt for the Enter Prepaid Card Number Menu again. If the subscriber presses [\*] or [#] without any digit input, and the mailbox has not expired, the SCP will return to the menu sequence at the point before the Enter Prepaid Card Number Menu would be invoked. If the subscriber presses [\*] or [#] without any digit input and the mailbox has already expired, the SCP will play

[0042] *Goodbye*

The SCP should disconnect the call.

### 2.3.17.3 Virtual Mailbox Options Menu

When the subscriber presses [3] at the Mailbox Options Menu to change the Mailbox Anywhere options, the SCP will play the following prompt for every Virtual Mailbox currently set up,

[2740] *You have a Virtual Mailbox at...<SCP name>..*  
 [2741] *...with telephone number...<Virtual Mailbox PTN>.*  
 [2739] *To listen or change greeting for this mailbox, press 1.*  
 [3030] *To review the next Virtual Mailbox, press #.*  
*To quit. Press \*.*

- [1] The subscriber will be presented with the Change Greeting Menu of the current Virtual Mailbox for changing the Virtual Mailbox Greeting.

- [#] The next Virtual Mailbox information will be played. If the subscriber presses [1], he will be presented with the Change Greeting Menu of the Virtual Mailbox to change greeting. If there is no more virtual mailbox, the SCP will play

[3031] *You have no more virtual mailbox.*  
 and return to the point before the Virtual Mailbox Options Menu would be invoked.

If the subscriber has not set up any Virtual Mailbox, the SCP will play the following and then return to the point before the Virtual Mailbox Options Menu would be invoked.

[2701] *You do not have a Virtual Mailbox set up at this time.*

### 2.3.17.4 Outcalling Option Menu

When the subscriber presses [4] at the Mailbox Option Menu, one of the following prompts will be played, depending on whether Outcalling is currently enabled or not

[2758] *Outcalling is currently disabled.*  
*To change the outcalling schedule, press 1.*  
*To enable outcalling, press 2.*  
*To quit, press \*.*

or,

[2759] *Outcalling is currently enabled.*  
*To change the outcalling schedule, press 1.*  
*To disable outcalling, press 2.*  
*To quit, press \*.*

- [1] The SCP will play the current setting of the Outcalling schedule.  
 [0509] *Outcalling schedule...*  
 [0510] *...is configured to operate between...*  
*...<start time>*  
 [0511] *...and...<stop time>*  
 [0515] *The telephone number is... <outcalling telephone number>*

The subscriber will be presented with the Change Outcalling Schedule Menu for changing the Outcalling schedule. After that, the subscriber will be returned to the Outcalling Option Menu.

- [2] The subscriber's Outcalling schedule will be toggled between enabled and disabled, and one of the following prompts will be played.  
 [2506] *Outcalling is currently enabled.*

or,

*[2507] Outcalling is currently disabled.*

[\*] The subscriber will be returned to the Mailbox Option Menu.

### 2.3.17.4.1 Change Outcalling Schedule Menu

The SCP will prompt for the following.

*[0576] To change the start time, press 1.  
To change the stop time, press 2.  
To change the outcalling telephone number, press 3.  
To quit, press \*.*

[1] The system will play the current start time and instruct the subscriber to enter a new start time.

*[0532] Your current start time is...<current start time>  
[0533] Enter the AM/PM mode for the start time.  
For AM, press 1.  
For PM, press 2.  
To quit, press \*.*

The subscriber selects the AM/PM mode for start time by entering the corresponding number. The SCP then prompts for the start time selection.

*[0534] Enter the start time for this schedule.  
Enter two digits for the hour, two digits for the minutes, followed by #.  
To quit, press \*.*

The subscriber enters the start time by entering the corresponding value. The system echoes the selection and then returns to the Change Outcalling Schedule Menu.

*[0535] Your new start time is <selected start time>*

[2] The system will play the current stop time and instruct the subscriber to enter a new stop time.

*[0536] Your current stop time is...<current start time>  
[0537] Enter the AM/PM mode for the stop time.  
For AM, press 1.  
For PM, press 2.  
To quit, press \*.*

The subscriber selects the AM/PM mode for stop time by entering the corresponding number. The SCP then prompts for the stop time selection.

*[0538] Enter the stop time for this schedule.  
Enter two digits for the hour, two digits for the minutes, followed by #.  
To quit, press \*.*

The subscriber enters the stop time by entering the corresponding value. The SCP echoes the selection and then returns to the Change Outcalling Schedule Menu.

*[0539] Your new stop time is <selected start time>*

[3] The system will play the current outcalling telephone number and instruct the subscriber to enter a new outcalling telephone number.

*[0542] Your current telephone number is...<current telephone number>*

The subscriber will be presented with the Enter Phone Number Menu for specifying the telephone number. If there is already a telephone number set up previously, the subscriber can press [\*] to leave the current telephone number unchanged.

*[0554] Your new telephone number is <new outcalling telephone number>.*

The SCP then returns to the Change Outcalling Schedule Menu.

- [\*] The subscriber will be returned to the Outcalling Option Menu.

## 2.3.17.5 Change Automatic Fax Delivery Option

When the subscriber presses [5] at the Mailbox Option Menu, one of the following prompts will be played, depending on whether Automatic Fax Delivery is currently enabled or not

[2794] *Automatic fax delivery is currently disabled.*

[2795] *To review or change the fax delivery telephone number, press 1.*

*To enable automatic fax delivery, press 2.*

*To quit, press \*.*

or,

[2796] *Automatic Fax Delivery is currently enabled.*

[2797] *To review or change the fax delivery telephone number, press 1.*

*To disable automatic fax delivery, press 2.*

*To quit, press \*.*

- [1] The SCP will play the current Fax Delivery telephone number, if one is set up. If no telephone number is set up, the following prompt will not be played.

[0515] *The telephone number is <Automatic Fax Delivery telephone number>*

The subscriber will then be prompted for the Enter Phone Number Menu to enter the Automatic Fax Delivery telephone number. After that, he will be returned to the Mailbox Option Menu.

- [2] The subscriber's Automatic Fax Delivery option will be toggled between enabled and disabled, and one of the following prompts will be played.

[2796] *Automatic fax delivery is currently enabled.*

or,

[2794] *Automatic fax delivery is currently disabled.*

## 2.4 Outcalling User Interface

The SCP can outcall to a subscriber's telephone for performing outside message notification. Whenever a new message is deposited in the subscriber's mailbox, the SCP will check the mailbox profile to determine if the outcalling schedule has been enabled. If the schedule is enabled and the specified parameters are met, the SCP will place a call to the telephone number set up in the schedule. When the call is answered, the SCP will inform the called party about the message arrival for the receiving subscriber. Note that the language used for outcalling is the subscriber's preferred language.

[0577] *This call is from an automatic voice messaging system, with messages for...<subscriber's recorded name>.*

or if the subscriber has not recorded his name,

[0577] *This call is from an automatic voice messaging system, with messages for...*

[2761] *...the owner of...*

[2045] *Mailbox...<mailbox number>*

The SCP then prompts the called party to enter the password.

[2762] *Please enter your password followed by #.*

*To quit, press \*.*

If the called party enters the correct password, he will be logged on to the mailbox and can then retrieve the messages. Once there is a successful log on, the Outcalling is considered successful. The retry counter will be reset, and the Outcalling will stop, no matter whether the subscriber actually listens to his messages. The Outcalling will only restart when there is a new message that arrives after the most recent successful Outcalling scenario.

An Outcalling is considered a failed attempt if the call is not answered within the duration specified by **Outcalling Time-out**, or if the call is answered but the answering party does not log on to the mailbox (the answering party might not be the subscriber himself, or worse yet, it might be an answering machine). In this case, the SCP will increment the Outcalling schedule retry counter, and call again after the retry interval. If the call is not answered because of busy condition, the assumption is that the subscriber is there but is on the phone. In this case, the SCP will not increment the retry counter, but will just retry after the retry interval expires. If all the call attempts allowed by the Outcalling schedule are failed attempts, a warning message will be played to the subscriber next time he logs on to his mailbox.

[0578] *We cannot reach you to delivery your messages. The last attempt was made on...<date and time>*

## 2.4.1 Outcalling to Operator Assisted Pager

An operator assisted pager has a human operator answers the pager call, who will ask the caller (in this case the SCP) to inform about the pager ID of the pager subscriber, and telephone number for the pager subscriber to return calls. If the page type in the Outcalling schedule is of Operator Assisted type, then two outcalling notification scenarios are possible, depending on whether the pager type is DID or non-DID.

Case 1 For DID type pager, when the SCP outcalls to the operator assisted paging station, the SCP will play the following prompt to the operator two times and then hang up.

[0588] *This call is from an automatic voice messaging system. Please page...<subscriber's recorded name>*

[2763] *Telephone number is...<subscriber's pager display number>*

or if the subscriber has not recorded his subscriber name,

[0588] *This call is from an automatic voice messaging system. Please page...*

[2761] *...the owner of...*

[2045] *Mailbox...<mailbox number>*

[2763] *Telephone number is...<subscriber's pager display number>*

Case 2 For non-DID pager type, when the system outcalls to the operator assisted paging station, the SCP will play the following prompt to the operator two times and then hang up.

[0588] *This call is from an automatic voice messaging system. Please page...<subscriber's pager ID number>*

[2763] *Telephone number is...<subscriber's pager display number>*

## 2.5 Virtual Mailbox User Interface

When a caller calls into a subscriber's Virtual Mailbox, the SCP will play the following.

Case 1 The subscriber has recorded a Virtual Mailbox greeting, which will be played.

Case 2 The subscriber has recorded a recorded name, which will be played.

Case 3 The subscriber has not recorded a Virtual Mailbox greeting. The SCP will play the following.

*[2045] Mailbox...<mailbox number>*

In all cases, the SCP will play the following to prompt the caller to leave messages.

*[3015] To page the person, press 2.*

*[2823] To leave a message, begin speaking after the tone. When you have finished recording, you may hang up to deliver the message or press any key for more options.*

*[2822] To send a fax, press the START button on your fax machine.*

The user interface is the same as that for external callers. See the section on “External Caller User Interface”.

If the subscriber’s mailbox is only configured for paging option, without provision for leaving voice nor fax messages, prompt 3015, 2823, and 2822 will not be played. The SCP will directly play “beep-beep-beep” to signal the caller.

## 2.6 Roaming Access User Interface

The subscriber uses Roaming Access to access his mailbox by calling into a remote SCP. The language used in this case will be the preferred language of the subscriber, irrespective of the Primary Language setting of the remote SCP.

If this is the first time the roaming subscriber logging in to this SCP, the SCP needs to retrieve message information from his host SCP and will play

*[3032] Please wait while we retrieve your information.*

The SCP needs to repeat prompts [3032] every 10 seconds. When the SCP has message information of the subscriber, it will perform the following two cases:

Case 1 There are no new messages, and the SCP will play the Mailbox Main Menu immediately.

Case 2 There are new voice messages, new fax messages, or new e-mail, and the SCP will play,

*[0032] You have...*

If there are new voice messages,

*[0033] <one>...new message.*

or,

*[0034] <N>...new messages.*

If there are new fax messages,

*[0807] <one>...new fax message.*

or,

*[0808] <N>...new fax messages.*

If there are new e-mail,

*[2779] <N>...new e-mail.*

The SCP will then play

*[3033] We are retrieving your messages. Please wait or you can call back later.*

If the roaming subscriber decides to hold while the SCP is retrieving messages, it should repeat prompt [3033] every 10 seconds. Any key entered by the roaming subscriber during this time will be ignored. When all messages have arrived, the SCP will play the Mailbox Main Menu. The subscriber can perform the same message retrieval and sending functions as from his home mailbox. However, when the subscriber

presses [3] at the Mailbox Main Menu, he will be presented with the Roaming Access Mailbox Options Menu .

If the roaming subscriber has logged into this SCP previously, the SCP should have his mailbox information and all his messages. The Mailbox Main Menu will be presented immediately.

If the subscriber's mailbox is not configured for Roaming Access, the SCP will play the following prompt and then terminate the call.

[3018] *We're sorry, your mailbox does not allow Roaming Access.*

[0042] *Good-bye.*

## 2.6.1 Roaming Access Mailbox Options Menu

When the subscriber presses [3] at the Mailbox Main Menu, he will be presented with the Roaming Access Mailbox Options Menu.

[2933] *To change your mailbox greeting, press 1.*

*To quit, press \*.*

- [1] The subscriber can change the personal greeting that is currently being used in his home mailbox. The change will affect the Primary Greeting or the Alternate Greeting, depending on which one is currently in use. The subscriber will be presented with the Record Menu for recording a new greeting. After that, the new greeting will be in effect, and the subscriber is returned to the roaming Mailbox Main Menu.

- [\*] The subscriber will be returned to the roaming Mailbox Main Menu.

## 2.7 Voice Anywhere User Interface

The SCP can outcall to a non-subscriber's telephone for delivering a voice message. When the call is answered, the SCP will inform the called party about the message.

[2774] *This call is from an automatic voice messaging system.*

If the sender has recorded the recipient's name, the following will be played instead.

[0577] *This call is from an automatic voice messaging system with message for...*

*...<recipient's recorded name>.*

If the subscriber has specified that a password is required to listen to the message, the SCP will prompt the called party to enter the password.

[2762] *Please enter your password followed by #.*

*To quit, press \*.*

If the subscriber has not specified that a password is required to listen to the message, the SCP will prompt the following.

[2766] *To listen to the message, please press #.*

*To quit, press \*.*

If the called party enters a valid password, or presses [#] if a password is not required, the SCP will play the voice message and then prompt for the End Of Voice Anywhere Menu.



## 2.7.1 End of Voice Anywhere Menu

After listening to the voice message, the recipient will be presented with the following options. Note that [2787] will only be played if the sending subscriber has specified that a reply message is allowed.

[2767] *To replay, press 1.*

[2787] *To reply to the sender, press 2.*

[0418] *To quit, press \*.*

[1] The SCP will replay the message and then prompt for the End Of Voice Anywhere Menu again.

[2] The recipient will be presented with the Record Menu for recording a reply message to be delivered to the subscriber. After the recipient has finished recording, the SCP will terminate the call.

[0042] *Good-bye.*

If the recipient has recorded a reply message, the message will be sent back to the subscriber as a new message.

[\*] The SCP will terminate the call.

[0042] *Good-bye.*

## 2.8 Fax Anywhere User Interface

The system can be configured to play a voice prompt when delivering a fax. When the call is answered, the SCP will alternatively play the CNG tone and the following prompt.

[2935] *Please turn on fax receiving now.*

The SCP will continue to play the CNG tone and the voice prompt until it detects the fax tone from the receiving side, in which case it will start the fax transmission.

## 2.9 System Administration User Interface

Most of the SA functions are performed from the system console. However, there are some functions that are done through the telephone. These functions are accessible by logging into the General Mailbox. In the case of the General Mailbox, the Mailbox Main Menu has the additional menu option "9" for accessing the SA functions.

[2703] *To play new messages, press 1.*

[2805] *To send a message, press 2.*

*To change mailbox options, press 3.*

[2705] *To retrieve new fax messages, press 4.*

[2780] *To retrieve e-mail, press 5.*

[2704] *To play saved messages, press 6.*

[2768] *For system administrator functions, press 9.*

[0418] *To quit, press \*.*

The System Administrator can use the General Mailbox as his regular mailbox for receiving and sending messages. In addition, he can press [9] and will be presented with the System Administrator Menu.

## 2.9.1 System Administrator Menu

The System Administrator Menu supports the following options.

*[2121] To change the Welcome Greeting, press 1.*

*To send a broadcast message, press 2.*

*To quit, press \*.*

If the SA presses [\*] to quit, he will be returned to the Mailbox Main Menu.

### 2.9.1.1 Changing Welcome Greeting Menu

When the SA presses [1] at the System Administrator Menu, the subscriber will be presented with the Update Greeting Menu for changing the Welcome Greeting. After that, the subscriber will be returned to the System Administrator Menu.

### 2.9.1.2 Sending Broadcast Message

When the SA presses [2] at the System Administrator Menu to send a broadcast message, the SA will be presented with the Record Menu for recording the message. After the SA has finished recording, the SCP will deliver the message to all subscribers, and play the following to confirm.

*[0302] Message delivered.*

After that, the SCP will return to the System Administrator Menu. Note that depending on the number of subscribers in the system, the broadcasting might take a while to complete.

## 2.10 Other features

### 2.10.1 Credit Reminder Notice

When the credit of a subscriber is about to exceed the limit, eg. within \$3 from the limit (configurable by System Administrator), the SCP should automatically deposit a warning notice to the mailbox.

*[3034] Your mailbox is near its credit limit.*

*[3035] Please add credit to your account.*

When the mailbox is about to expire within 7 days (configurable by System Administrator), the SCP should automatically deposit a warning notice to the mailbox:

*[3036] Your mailbox will expire in... <number of days left>*

*[3037] ...days.*

*[3035] Please add credit to your account.*

### **1.1.1.1 CCP Service Model – CCP POP**

The CCP service model is based on the concept of corporate unified messaging co-location. This is an outsourcing model where corporate customers no longer have to invest in expensive on-premise unified messaging equipment. By subscribing to UniCONN's corporate unified messaging co-location services, corporate users can continue to enjoy all the benefits of an on-premise CPE (Customer Premise Equipment) messaging equipment with full PBX integration but without the upfront equipment purchase cost, equipment maintenance cost, support cost, and the reality of quick technology obsolescence.

This model offers the corporate customers the following benefits:

- No equipment to purchase
- No equipment to maintain
- Up to 48% cost savings overall
- Productivity increase from greater reliability and reduced downtime
- Archive services for corporate voice and fax messages
- Low monthly mailbox fee
- Easily upgradable to new services as technology improves
- Preserve the investment of corporate PBX
- Full access to UniCONN Network Services such as Mailbox Networking, Roaming Access or Mailbox Networking

This model offers UniCONN the following benefits:

- Secure corporate mailbox users as UniCONN mailbox subscribers
- Derive higher service revenues from business mailbox subscribers
- Share the cost of the SCP POPs used for message co-location

#### **1.1.1.1.1 Outsourcing is the Trend**

Outsourcing is a major trend in the corporate world. Companies today want to focus on their core business and are increasingly willing to outsource technologies, products and services to external organizations. Common outsourcing practices include web, e-mail, manufacturing, software, personnel, etc. Companies have come to recognize there is significant value to have technologies, products and services managed by external organizations. The economies of scale at outsourcing companies allow the service cost to be sufficiently low to make the services attractive to the subscribers.

Companies today demand reliable, consistent, scalable and instantly-serviceable corporate messaging infrastructures. Similar to how companies today “outsource” electricity and telephone services, corporate messaging is becoming another key area for outsourcing. As the technologies become more complex, more and more companies of all sizes are choosing to outsource in order to reduce administration and management cost in order to focus on their core competencies.

There are many successful public companies offering outsourcing services for corporate customers.

**Critical Path** offers e-mail outsourcing for 1.4 million subscribers including America-Online and many high profile corporate customers. It has a market capitalization of \$1.3 billion.

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Furthermore, the GartnerGroup predicts (June, 1999) that unified messaging adoption in the corporate market will be mainly through outsourcing until 2003 when the unified messaging on-premise equipment becomes more mature. The GartnerGroup also predicts that existing corporate voice mail hardware and software will become obsolete beginning in 2003. This means that UniCONN has approximately a 4-year market window to be the first and leading player to capture a significant portion of the corporate unified messaging market. UniCONN will continue to offer new messaging and communication services for corporate customers to retain the existing corporate customer base and to grow new corporate customers.

#### **1.1.1.1.2 Value Proposition**

UniCONN offers a company the following value proposition in unified messaging outsourcing:

##### **Proven Methodology**

UniCONN is uniquely qualified to be the unified messaging outsourcer for corporations of all sizes. As the world largest global unified messaging service provider with over 1 million subscribers and a worldwide network with 27 Point of Accesses, UniCONN is uniquely qualified to provide a reliable, robust and proven messaging network for corporate users. UniCONN's authorized resellers will assist the customers with the entire outsourcing process beginning from a survey of customer's current communication infrastructure including PBX, e-mail server and other IT systems, installation and integration with customer's existing equipment, test and verifications, full-scale deployment, training and operation management.

##### **Rapid Deployment of Services**

As soon as a corporate customer makes a decision to outsource, UniCONN will immediately make available the following resources to the customer:

- **Message Data Center:** UniCONN will immediately select a suitable SCP server in a co-location center to host the unified messaging mailboxes for the corporate users.
- **Help Desk:** UniCONN will immediately make available the services of its Help Desk to the corporate users.

- **Installation:** UniCONN will immediately schedule the installation of the CCP POP at the customer premise. The installation will be done through authorized resellers or installers.
- **Migration:** Special tools will be utilized to aid the migration from the customer's existing voice mail system to the UniCONN unified messaging services. This will be done through authorized resellers or installers.
- **Network Operation Centers (NOC):** As soon as the CCP POP unit is installed, the customer's messaging activities will be monitored on the UniCONN NOC which is operated on a 24X7 basis. Multiple NOCs are planned for different regions to provide better local support. There are currently two NOCs: one in the US (for US and European customers) and one in Hong Kong (for Asian customers).

### **Predictable Cost**

Unified messaging outsourcing offers corporate customers affordable and predictable cost points. On the contrary, managing an in-house unified messaging system is often plagued with unpredictable cost due to technical or human errors, system malfunctions, and associated administration and support cost. Unified messaging outsourcing offers corporate customers totally predictable costs based on a flat per-user rate and Service Level Agreement (SLA) rates.

Industry studies have shown that the majority of direct messaging system costs are in the areas of system administration, management, support and training. Outsourcing relieves a corporation from these unpredictable cost elements by providing a much lower and completely predictable cost structure.

### **Lower Total Cost of Ownership (TCO)**

UniCONN provides industry-leading unified messaging services at a fraction of the what it costs to house an internal messaging equipment. Corporate customers no longer are responsible for the cost of equipment, hardware upgrade, software upgrade, equipment maintenance, administration, management, support, and training. Corporate customers can take advantage of UniCONN's cutting edge understanding of current and future messaging technologies. UniCONN's specialization and experiences in unified messaging plus UniCONN's economies of scale in providing messaging services directly translate into lower TCO for the corporate customers. Furthermore, the opportunity costs from the reduction in administration and management allows the administrator's efforts to be re-directed to other productivity enhancing tasks elsewhere within the organization.

### **Maintain Existing IT Investment**

By outsourcing unified messaging with UniCONN, corporate customers can keep their existing investment in corporate telecommunication equipment such as PBXs, telephone sets and e-mail servers. UniCONN will provide an on-site CCP POP unit which integrates with corporate customers' existing PBX and IT equipment. There is no need for the corporate customers to replace any of their existing IT infrastructure.

### **Maintain Control**

Corporate customers can set up and maintain unified messaging mailboxes themselves either directly over the on-premise CCP POP console or through the UniCONN web site. Administration changes take place instantly and making changes is easy and intuitive. The administrator does not need to be familiar with exiting corporate IT infrastructures or be knowledgeable with any other telecommunication equipment in order to administer the UniCONN unified messaging services.

### **Better Reliability**

The UniCONN unified messaging co-location service offers greater reliability than a traditional on-premise messaging equipment for the following reasons:

#### Message Redundancy

The UniCONN CCP POP architecture allows two copies of each message to be stored at any one time. One copy is kept at the CCP POP hardware located at the customer premise. Another copy is kept at a designated UniCONN SCP in a co-location center (Message Data Center). Messages stored at a UniCONN Message Data Center are guaranteed to have a 99.8% uptime, which is significantly higher than traditional on-premise messaging equipment. In the event the CCP POP hardware goes down at the customer premise, corporate voice or fax messages can still be retrieved and sent from e-mail, web or telephone via any of the SCP POPs.

#### Automated Fault Detection

The CCP POP at customer premise is constantly being monitored by its designated UniCONN SCP for proper operation. Any malfunction at a CCP POP will be automatically detected by its designated SCP and reported to the UniCONN Network Operation Center (NOC). A malfunction can be a network fault, CCP POP hardware failure, or any other system faults that prevent message data from being received from the corporate PBX and transmitted to its designated SCP. UniCONN NOC will take immediate actions to correct the fault. On-site hardware repair will be done through a nationwide network of authorized installers.

### **1.1.1.1.3 Established Infrastructure and Proven Technologies**

Successful implementation of unified messaging co-location and outsourcing services for corporate customers requires the following key technology ingredients:

- PBX integration technology
- Networking/POP technology
- Worldwide Network

UniCONN has already established a worldwide infrastructure and developed technologies to support the unified messaging co-location model. The ubiquitousness of the Internet completes the model.

### **PBX integration technology**

Corporate voice and fax messaging solutions require seamless integration between the messaging equipment and the corporate PBX. Due to the lack of standards in traditional PBXs, integration with PBXs requires highly specialized technical knowledge which UniCONN's founders have acquired from over 30 years of combined industry experiences. The CCP POP unit can integrate with over 50 PBX and Key Telephone systems including Lucent, Nortel, Mitel, Toshiba, Panasonic, Siemens/Rolm, NEC and many others. Ability to integrate with today's corporate PBXs is essential to penetrate corporate messaging market. Integration with corporate PBXs allows corporate users to use their office voice mailbox as the one and only unified messaging mailbox they will ever need. This level of integration brings major convenience to corporate users and generates values.

### **Networking/POP technology**

Implementing corporate messaging outsourcing requires a proven networking technology to transport corporate voice and fax messages between the corporate premise and a designated message data center located in an off-site location. UniCONN's patent-pending networking/POP technology manages the message flow, control, load balancing, retrieval and deposit between the customer premise and the UniCONN Network. Corporate users can deposit and retrieve voice and fax messages from any of the SCP POP access points worldwide. The CCP POP is a natural extension of the POP technology where corporate users can use their office extensions to retrieve and send voice/fax messages by making intercom calls to their office CCP POP.

### **Worldwide Network**

Successful corporate unified messaging outsourcing model must be backed by a solid worldwide network where corporate messages are stored, maintained, archived and mostly importantly, readily made available for access by telephone or PC in the corporate office or anywhere in the world. The UniCONN Network today spans 27 Access Points in North America, Asia and Europe and is rapidly growing. Each UniCONN Message Data Center is powered by telco grade IP telephony servers with full redundancy for the safekeeping of corporate messages. The UniCONN Network is uniquely designed to support the unified messaging needs for corporations of all sizes. The UniCONN Network also serves as a backup for corporate message store in the event the corporate PBX or the CCP POP goes down.

#### **1.1.1.1.4 Service and Support**

##### **Worldwide Network Operation Centers (NOC)**

UniCONN currently maintains two Network Operation Centers (NOC) in San Jose, California, USA and in Hong Kong. More NOCs are planned in the future. The NOCs will be staffed with experienced technical and customer support personnel to constantly monitor the status of all CCP POPs and the UniCONN Network worldwide. Any abnormalities will be reported automatically to the NOC and corrective actions will be taken immediately by the support staff on-duty.

### 1.1.1.1.5 Cost Comparison

Below is a cost comparison between outsourced unified messaging service through UniCONN and a non-outsourced unified messaging equipment purchase. Unified messaging outsourcing through UniCONN can save corporate customers up to 50% in the first 5 years.

Assumptions<sup>1</sup>:

	Non-outsourced	Outsourced
<b>System Administrator cost</b>		
Mean administrator annual salary	\$80,000	\$80,000
Users supported per administrator	519	1 for all
Percent of time devoted to unified messaging	75%	10%
<b>Help Desk cost</b>		
Mean help desk annual salary	\$55,290	-
Users supported per help desk person	445	-
<b>Technical support cost</b>		
Mean technical support annual salary	\$76,939	-
Users supported per technical support person	494	-
<b>Other Assumptions</b>		
Hours per work year	2000	2000
Mean worker salary	\$50,000	\$50,000
Ratio of revenue generation to salary	2.8	2.8
Unified messaging equipment(100 users/seats) cost <sup>2</sup>	\$39,000	-
Unified messaging equipment(1000 users/seats) cost <sup>3</sup>	\$295,000	-
Equipment amortization schedule	5 years	-
Cost of borrowing money	10%	-
Annual unified messaging equipment maintenance	10% retail	-
UniCONN unified messaging mailbox fee per month <sup>4</sup>	-	\$20
Annual estimated down time	1900 minutes	1051 minutes <sup>5</sup>
Percentage of employees affected by downtime	38.9%	38.9%
Percentage of productivity reduction by downtime	26.2%	26.2%

<sup>1</sup>Data sources: Creative Networks, Inc., Palo Alto, CA unless otherwise specified

<sup>2</sup>Active Voice Unity with fax option retail price

<sup>3</sup>Lucent Octel with fax option retail price

<sup>4</sup>Suggested UniCONN unified messaging retail price

<sup>5</sup>UniCONN provides 99.8% uptime



*Case 1: 100 users*

Administration and management cost:

The total annual administration (System Administrator, Help Desk and Technical Support) cost of an in-house managed unified messaging environment is:  
 $\$80,000 \times 75\% \times (100/519) + \$55,290 \times (100/445) + \$76,939 \times (100/494) = \$39,561$  or \$396 per user. In an outsourced environment with one administrator and a monthly mailbox fee of \$20, the annual cost per user is:  
 $(\$80,000 \times 10\% \times (100/519))/100 + \$20 \times 12 = \$255$

Downtime productivity loss:

In an in-house managed unified messaging environment, the total cost of downtime per year is:

$$1900 \text{ minutes} \times 38.9\% \times 26.2\% \times \$50,000 / (2,000 \text{ hrs} \times 60 \text{ min/hr}) = \$81$$

In an outsourced unified messaging environment, the total cost of downtime per year is:

$$1051 \text{ minutes} \times 38.9\% \times 26.2\% \times \$50,000 / (2,000 \text{ hrs} \times 60 \text{ min/hr}) = \$45$$

Downtime revenue loss:

In an in-house managed unified messaging environment, the total revenue cost from downtime per year is:

$$\$81 \times 2.8 = \$227$$

In an outsourced unified messaging environment, the total revenue cost from downtime per year is:

$$\$45 \times 2.8 = \$126$$

**100-employee company annual unified messaging per user cost comparison**

Cost	Non-outsourced	Outsourced	Outsourced Savings
Administration and management cost	\$396	\$255	36%
Downtime productivity loss	\$81	\$45	44%
Downtime revenue loss	\$227	\$126	44%
Equipment amortization cost (year 1 to 5)	\$78	\$0	-
Equipment purchase interest cost	\$39	\$0	-
Equipment maintenance cost	\$39	\$0	-
Total (year 1 to 5)	\$860	\$426	50%
Total (year 6 and after)	\$782	\$426	46%

Annual cost savings during the first 5 years is \$43,400. Total cost savings for the first 5 years is \$217,000.

*Case 2: 1000 users*

The annual cost per user are identical to the 100-employee case described above except for the difference in cost of the equipment:

**1000-employee company annual unified messaging per user cost comparison**

Cost	Non-outsourced	Outsourced	Outsourced Savings
Administration and management cost	\$396	\$255	36%
Downtime productivity loss	\$81	\$45	44%
Downtime revenue loss	\$227	\$126	44%
Equipment amortization cost (year 1 to 5)	\$59	\$0	-
Equipment purchase interest cost	\$30	\$0	-
Equipment maintenance cost	\$30	\$0	-
Total (year 1 to 5)	\$823	\$426	48%
Total (year 6 and after)	\$764	\$426	44%

Annual cost savings for the first 5 years is \$397,000. Total cost savings for the first 5 years is \$1,985,000.

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The CCP service model is based on the concept of corporate unified messaging outsourcing. This is a model where corporate customers no longer have to invest in expensive on-premise unified messaging equipment. By subscribing to UniCONN's corporate unified messaging co-location services, corporate users can continue to enjoy all the benefits of an on-premise CPE (Customer Premise Equipment) messaging equipment with full PBX integration but without the up-front equipment purchase cost, equipment maintenance cost, support cost, and the reality of quick technology obsolescence.

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- Productivity increase from greater reliability and reduced downtime
- Archive services for corporate voice and fax messages
- Low monthly mailbox fee
- Easily upgradable to new services as technology improves
- Preserve the investment of corporate PBX
- Full access to UniCONN Network Services such as Mailbox Networking, Roaming Access or Mailbox Networking

This model offers UniCONN the following benefits:

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**Sun Microsystems** announces plans at end of August, 1999 to provide application hosting (or outsourcing) services for subscribers to access a suite of office software via the Internet. The business models include free services to the end subscribers by charging the ISPs for the services and directly charging the end subscribers. **Microsoft** immediately announces plans to evaluate the office software outsourcing strategies in order to be competitive.

Furthermore, the GartnerGroup predicts (June, 1999) that unified messaging adoption in the corporate market will be mainly through outsourcing until 2003 when the unified messaging on-premise equipment becomes more mature. The GartnerGroup also predicts that existing corporate voice mail hardware and software will become obsolete beginning in 2003. This means that UniCONN has approximately a 4-year market window to be the first and leading player to capture a significant portion of the corporate unified messaging market. UniCONN will continue to offer new messaging and communication services for corporate customers to retain the existing corporate customer base and to grow new corporate customers.

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### **Rapid Deployment of Services**

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- **Network Operation Centers (NOC):** As soon as the CCP POP unit is installed, the customer's messaging activities will be monitored on the UniCONN NOC which is operated on a 24X7 basis. Multiple NOCs are planned for different regions to provide better local support. There are currently two NOCs: one in the US (for US and European customers) and one in Hong Kong (for Asian customers).

### **Predictable Cost**

Unified messaging outsourcing offers corporate customers affordable and predictable cost points. On the contrary, managing an in-house unified messaging system is often plagued with unpredictable cost due to technical or human errors, system malfunctions, and associated administration and support cost. Unified messaging outsourcing offers corporate customers totally predictable costs based on a flat per-user rate and Service Level Agreement (SLA) rates.

Industry studies have shown that the majority of direct messaging system costs are in the areas of system administration, management, support and training. Outsourcing relieves a corporation from these unpredictable cost elements by providing a much lower and completely predictable cost structure.

### **Lower Total Cost of Ownership (TCO)**

UniCONN provides industry leading unified messaging services at a fraction of what it would cost to house an on-premise messaging equipment. Corporate customers no longer are responsible for the cost of equipment, hardware upgrade, software upgrade, equipment maintenance, administration, management, support, and training. Corporate customers can take advantage of UniCONN's cutting edge understanding of current and future messaging technologies. UniCONN's specialization and experiences in unified messaging plus UniCONN's economies of scale in providing messaging services directly translate into lower TCO for the corporate customers. Furthermore, the opportunity costs from the reduction in administration and management allows the administrator's efforts to be re-directed to other productivity enhancing tasks elsewhere within the organization.

### **Maintain Existing IT Investment**

By outsourcing unified messaging with UniCONN, corporate customers can keep their existing investment in corporate telecommunication equipment such as PBXs, telephone sets and e-mail servers. UniCONN will provide an on-site CCP POP unit which integrates with corporate customers' existing PBX and IT equipment. There is no need for the corporate customers to replace any of their existing IT infrastructure.

### **Maintain Control**

Corporate customers can set up and maintain unified messaging mailboxes themselves either directly over the on-premise CCP POP console or through the UniCONN web site. Administration changes take place instantly and making changes is easy and intuitive. The administrator does not need to be familiar with exiting corporate IT infrastructures or be knowledgeable with any other telecommunication equipment in order to administer the UniCONN unified messaging services.

### **Better Reliability**

The UniCONN unified messaging co-location service offers greater reliability than a traditional on-premise messaging equipment for the following reasons:

#### Message Redundancy

The UniCONN CCP POP architecture allows two copies of each message to be stored at any one time. One copy is kept at the CCP POP hardware located at the customer premise. Another copy is kept at a designated UniCONN SCP in a co-location center (Message Data Center). Messages stored at a UniCONN Message Data Center are guaranteed to have a 99.8% up-time, which is significantly higher than traditional on-premise messaging equipment. In the event the CCP POP hardware goes down at the customer premise, corporate voice or fax messages can still be retrieved and sent from e-mail, web or telephone via any of the SCP POPs.

#### Automated Fault Detection

The CCP POP at the customer premise is constantly being monitored by its designated UniCONN SCP for proper operation. Any malfunction at a CCP POP will be automatically detected by its designated SCP and reported to the UniCONN Network Operation Center (NOC). A malfunction can be a network fault, CCP POP hardware failure, or any other system faults that prevent message data from being received from the corporate PBX and transmitted to its designated SCP. UniCONN NOC will take immediate actions to correct the fault. On-site hardware repair will be done through a nationwide network of authorized installers.

### **1.1.1.1.3 Established Infrastructure and Proven Technologies**

Successful implementation of unified messaging co-location and outsourcing services for corporate customers requires the following key technology ingredients:

- PBX integration technology
- Networking/POP technology

- **Worldwide Network**

UniCONN has already established a worldwide infrastructure and developed technologies to support the unified messaging co-location model. The ubiquitousness of the Internet completes the model.

**PBX integration technology**

Corporate voice and fax messaging solutions require seamless integration between the messaging equipment and the corporate PBX. Due to the lack of standards in traditional PBXs, integration with PBXs requires highly specialized technical knowledge which UniCONN's founders have acquired from over 30 years of combined industry experiences. The CCP POP unit can integrate with over 50 PBX and Key Telephone systems including Lucent, Nortel, Mitel, Toshiba, Panasonic, Siemens/Rolm, NEC and many others. Ability to integrate with today's corporate PBXs is essential to penetrate corporate messaging market. Integration with corporate PBXs allows corporate users to use their office voice mailbox as the one and only unified messaging mailbox they will ever need. This level of integration brings major convenience to corporate users and generates values.

**Networking/POP technology**

Implementing corporate messaging outsourcing requires a proven networking technology to transport corporate voice and fax messages between the corporate premise and a designated message data center located in an off-site location. UniCONN's patent-pending networking/POP technology manages the message flow, control, load balancing, retrieval and deposit between the customer premise and the UniCONN Network. Corporate users can deposit and retrieve voice and fax messages from any of the SCP POP access points worldwide. The CCP POP is a natural extension of the POP technology where corporate users can use their office extensions to retrieve and send voice/fax messages by making intercom calls to their office CCP POP.

**Worldwide Network**

Successful corporate unified messaging outsourcing model must be backed by a solid worldwide network where corporate messages are stored, maintained, archived and mostly importantly, readily made available for access by telephone or PC in the corporate office or anywhere in the world. The UniCONN Network today spans 27 Access Points in North America, Asia and Europe and is rapidly growing. Each UniCONN Message Data Center is powered by telco grade IP telephony servers with full redundancy for the safekeeping of corporate messages. The UniCONN Network is uniquely designed to support the unified messaging needs for corporations of all sizes. The UniCONN Network also serves as a backup for corporate message store in the event the corporate PBX or the CCP POP goes down.

**1.1.1.1.4 Service and Support**

**Worldwide Network Operation Centers (NOC)**

UniCONN currently maintains two Network Operation Centers (NOC) in San Jose, California, USA and in Hong Kong. More NOCs are planned in the future. The NOCs will be staffed with experienced technical and customer support personnel to constantly monitor the status of all CCP POPs and the UniCONN Network worldwide. Any abnormalities will be reported automatically to the NOC and corrective actions will be taken immediately by the support staff on-duty.

#### **CCP POP Hardware Support**

The CCP POP hardware at the corporate customer premise will be maintained via a number of contracted third-party nationwide installation and service companies. These companies typically are contracted to install the CCP POP hardware at the customer premise as well. These companies are generally nationwide or regional interconnect companies or voice mail system installers or resellers. They are selected and qualified by UniCONN to provide the corporate customers with the level of service and support required. Any CCP POP hardware malfunctions reported will be immediately reported to UniCONN's NOC and an authorized local service company will be dispatched to the customer site. The response time will depend on the Service Level Agreement (SLA) in place for the customer.



### 1.1.1.1.5 Cost Comparison

Below is a cost comparison between outsourced unified messaging service through UniCONN and a non-outsourced unified messaging equipment purchase. Unified messaging outsourcing through UniCONN can save corporate customers up to 50% in the first 5 years.

Assumptions<sup>1</sup>:

	Non-outsourced	Outsourced
System Administrator cost		
Mean administrator annual salary	\$80,000	\$80,000
Users supported per administrator	519	1 for all
Percent of time devoted to unified messaging	75%	10%
Help Desk cost		
Mean help desk annual salary	\$55,290	-
Users supported per help desk person	445	-
Technical support cost		
Mean technical support annual salary	\$76,939	-
Users supported per technical support person	494	-
Other Assumptions		
Hours per work year	2000	2000
Mean worker salary	\$50,000	\$50,000
Ratio of revenue generation to salary	2.8	2.8
Unified messaging equipment(100 users/seats) cost <sup>2</sup>	\$39,000	-
Unified messaging equipment(1000 users/seats) cost <sup>3</sup>	\$295,000	-
Equipment amortization schedule	5 years	-
Cost of borrowing money	10%	-
Annual unified messaging equipment maintenance	10% retail	-
UniCONN unified messaging mailbox fee per month <sup>4</sup>	-	\$20
Annual estimated down time	1900 minutes	1051 minutes <sup>5</sup>
Percentage of employees affected by downtime	38.9%	38.9%
Percentage of productivity reduction by downtime	26.2%	26.2%

<sup>1</sup>Data sources: Creative Networks, Inc., Palo Alto, CA unless otherwise specified

<sup>2</sup>Active Voice Unity with fax option retail price

<sup>3</sup>Lucent Octel with fax option retail price

<sup>4</sup>Suggested UniCONN unified messaging retail price

<sup>5</sup>UniCONN provides 99.8% up-time

*Case 1: 100 users*

Administration and management cost:

The total annual administration (System Administrator, Help Desk and Technical Support) cost of an in-house managed unified messaging environment is:  
 $\$80,000 \times 75\% \times (100/519) + \$55,290 \times (100/445) + \$76,939 \times (100/494) = \$39,561$  or \$396 per user. In an outsourced environment with one administrator and a monthly mailbox fee of \$20, the annual cost per user is:  
 $(\$80,000 \times 10\% \times (100/519))/100 + \$20 \times 12 = \$255$

Downtime productivity loss:

In an in-house managed unified messaging environment, the total cost of downtime per year is:

$$1900 \text{ minutes} \times 38.9\% \times 26.2\% \times \$50,000 / (2,000 \text{ hrs} \times 60 \text{ min/hr}) = \$81$$

In an outsourced unified messaging environment, the total cost of downtime per year is:

$$1051 \text{ minutes} \times 38.9\% \times 26.2\% \times \$50,000 / (2,000 \text{ hrs} \times 60 \text{ min/hr}) = \$45$$

Downtime revenue loss:

In an in-house managed unified messaging environment, the total revenue cost from downtime per year is:

$$\$81 \times 2.8 = \$227$$

In an outsourced unified messaging environment, the total revenue cost from downtime per year is:

$$\$45 \times 2.8 = \$126$$

**100-employee company annual unified messaging per user cost comparison**

Cost	Non-outsourced	Outsourced	Outsourced Savings
Administration and management cost	\$396	\$255	36%
Downtime productivity loss	\$81	\$45	44%
Downtime revenue loss	\$227	\$126	44%
Equipment amortization cost (year 1 to 5)	\$78	\$0	-
Equipment purchase interest cost	\$39	\$0	-
Equipment maintenance cost	\$39	\$0	-
Total (year 1 to 5)	\$860	\$426	50%
Total (year 6 and after)	\$782	\$426	46%

Annual cost savings during the first 5 years is \$43,400. Total cost savings for the first 5 years is \$217,000.

*Case 2: 1000 users*

The annual cost per user are identical to the 100-employee case described above except for the difference in cost of the equipment:

**1000-employee company annual unified messaging per user cost comparison**

Cost	Non-outsourced	Outsourced	Outsourced Savings
Administration and management cost	\$396	\$255	36%
Downtime productivity loss	\$81	\$45	44%
Downtime revenue loss	\$227	\$126	44%
Equipment amortization cost (year 1 to 5)	\$59	\$0	-
Equipment purchase interest cost	\$30	\$0	-
Equipment maintenance cost	\$30	\$0	-
Total (year 1 to 5)	\$823	\$426	48%
Total (year 6 and after)	\$764	\$426	44%

Annual cost savings for the first 5 years is \$397,000. Total cost savings for the first 5 years is \$1,985,000.

# **UniCONN**

# **Business Plan**

**Revision 3**

**October 20, 1999**

United Connections, Inc.  
70 Bonaventura Drive  
San Jose, CA 95134

# TABLE OF CONTENTS

<b>1.</b>	<b>SUMMARY .....</b>	<b>ERROR! BOOKMARK NOT DEFINED.</b>
1.1	COMPANY .....	ERROR! BOOKMARK NOT DEFINED.
1.2	CONTACT .....	ERROR! BOOKMARK NOT DEFINED.
1.3	TYPE OF BUSINESS .....	ERROR! BOOKMARK NOT DEFINED.
1.4	COMPANY SUMMARY .....	ERROR! BOOKMARK NOT DEFINED.
1.5	MANAGEMENT .....	ERROR! BOOKMARK NOT DEFINED.
1.6	PRODUCT/SERVICE AND COMPETITION.....	ERROR! BOOKMARK NOT DEFINED.
1.7	UNIQUENESS .....	ERROR! BOOKMARK NOT DEFINED.
1.8	FUNDS REQUESTED .....	ERROR! BOOKMARK NOT DEFINED.
1.9	USE OF FUNDS.....	ERROR! BOOKMARK NOT DEFINED.
1.10	FINANCIAL HISTORY.....	ERROR! BOOKMARK NOT DEFINED.
1.11	FINANCIAL PROJECTIONS.....	ERROR! BOOKMARK NOT DEFINED.
1.12	EXIT .....	ERROR! BOOKMARK NOT DEFINED.
<b>2.</b>	<b>BUSINESS AND ITS FUTURE .....</b>	<b>1</b>
2.1	GENERAL .....	1
2.2	NATURE OF THE BUSINESS .....	1
2.3	BUSINESS HISTORY .....	1
2.4	UNIQUENESS .....	2
2.5	PRODUCTS/SERVICES .....	5
2.5.1	<i>Current Products/Services.....</i>	<i>5</i>
2.5.1.1	SCP and SCP POP Services .....	5
2.5.1.1.1	Message Send/Retrieval from Telephone .....	6
2.5.1.1.2	Message Send/Retrieval from the web.....	7
2.5.1.1.3	Message Send/Retrieval from E-mail .....	7
2.5.1.1.4	Sending a Voice Message (Voice Anywhere) .....	7
2.5.1.1.5	Sending a Fax Message (Fax Anywhere).....	7
2.5.1.2	CCP POP Services .....	8
2.5.2	<i>Future Products/Services .....</i>	<i>8</i>
2.5.2.1	Message Type to Include Video .....	9
2.5.2.2	Text-to-Speech .....	9
2.5.2.3	Cellular Integration.....	9
2.5.2.4	IP Switch Integration.....	9
2.6	CUSTOMERS OF THE PRODUCTS/SERVICES .....	9
2.6.1	<i>CCP Business Customers .....</i>	<i>9</i>
2.6.2	<i>SCP Consumer and Business Customers.....</i>	<i>10</i>
2.7	MARKETING .....	12
2.7.1	<i>Unified Messaging Market .....</i>	<i>12</i>
2.7.2	<i>Business Models .....</i>	<i>13</i>
2.7.2.1	SCP Service Model 1 – Co-located SCP .....	13
2.7.2.2	SCP Service Model 2– SCP POP.....	14
2.7.2.3	CCP Service Model – CCP POP .....	16
2.7.2.3.1	Outsourcing is the Trend .....	16
2.7.2.3.2	Value Proposition.....	17
2.7.2.3.3	Established Infrastructure and Proven Technologies.....	20
2.7.2.3.4	Service and Support.....	21
2.7.2.3.5	Cost Comparison .....	22
2.7.2.3.6	Sales Channels.....	Error! Bookmark not defined.

2.7.3	Trade Shows, PR and Advertisement.....	Error! Bookmark not defined.
2.7.4	Service Packaging.....	Error! Bookmark not defined.
2.8	COMPETITIONS .....	ERROR! BOOKMARK NOT DEFINED.
2.8.1	Service Market.....	Error! Bookmark not defined.
2.8.1.1	Jfax(Los Angeles, CA, USA).....	Error! Bookmark not defined.
2.8.1.2	Efax (Menlo Park, CA, USA).....	Error! Bookmark not defined.
2.8.1.3	Orchestrate (Atlanta, Georgia, USA).....	Error! Bookmark not defined.
2.8.2	CPE Market.....	Error! Bookmark not defined.
2.8.2.1	Applied Voice Technologies (Kirkland, WA, USA ) .....	Error! Bookmark not defined.
2.8.2.2	Lucent Technologies (Milpitas, CA, USA) .....	Error! Bookmark not defined.
2.8.2.3	Active Voice Corp.(Seattle, WA, USA) .....	Error! Bookmark not defined.
2.9	REVENUE SOURCES.....	ERROR! BOOKMARK NOT DEFINED.
2.10	KEY ACCOUNTS TO-DATE.....	ERROR! BOOKMARK NOT DEFINED.
2.11	KEY ACCOUNTS UNDER NEGOTIATIONS .....	ERROR! BOOKMARK NOT DEFINED.
2.12	SCP POP DEPLOYMENT.....	ERROR! BOOKMARK NOT DEFINED.
2.13	SUPPLIERS .....	ERROR! BOOKMARK NOT DEFINED.
2.14	PROPERTY AND FACILITIES.....	ERROR! BOOKMARK NOT DEFINED.
2.15	PATENTS .....	ERROR! BOOKMARK NOT DEFINED.
2.16	RESEARCH AND DEVELOPMENT .....	ERROR! BOOKMARK NOT DEFINED.
2.17	CORPORATE STRUCTURE.....	ERROR! BOOKMARK NOT DEFINED.
3.	THE MANAGEMENT .....	ERROR! BOOKMARK NOT DEFINED.
3.1	BOARD OF DIRECTORS .....	ERROR! BOOKMARK NOT DEFINED.
3.2	KEY CONTRIBUTORS .....	ERROR! BOOKMARK NOT DEFINED.
3.3	MANAGEMENT FIDELITY .....	ERROR! BOOKMARK NOT DEFINED.
3.4	SHAREHOLDER STRUCTURE – PREFERRED A.....	ERROR! BOOKMARK NOT DEFINED.
3.5	SHAREHOLDER STRUCTURE – PREFERRED B.....	ERROR! BOOKMARK NOT DEFINED.
3.6	PROPOSED SHAREHOLDER STRUCTURE – PREFERRED C .....	ERROR! BOOKMARK NOT DEFINED.
3.7	ACCOUNTANTS AND LAWYERS.....	ERROR! BOOKMARK NOT DEFINED.
4.	RISK FACTORS.....	ERROR! BOOKMARK NOT DEFINED.
4.1	PRODUCT AVAILABILITY .....	ERROR! BOOKMARK NOT DEFINED.
4.2	MARKET DYNAMICS.....	ERROR! BOOKMARK NOT DEFINED.
5.	RETURN ON INVESTMENT AND EXIT .....	ERROR! BOOKMARK NOT DEFINED.
5.1	INITIAL PUBLIC OFFERING .....	ERROR! BOOKMARK NOT DEFINED.
5.2	ACQUISITION .....	ERROR! BOOKMARK NOT DEFINED.
6.	ANALYSIS OF OPERATIONS.....	ERROR! BOOKMARK NOT DEFINED.
6.1	GENERAL .....	ERROR! BOOKMARK NOT DEFINED.
6.2	RESULTS OF OPERATION.....	ERROR! BOOKMARK NOT DEFINED.
7.	FINANCIAL STATEMENTS .....	ERROR! BOOKMARK NOT DEFINED.
8.	FINANCIAL PROJECTIONS.....	ERROR! BOOKMARK NOT DEFINED.
8.1	QUARTERLY PROJECTIONS .....	ERROR! BOOKMARK NOT DEFINED.

## **2. Business and Its Future**

### **2.1 General**

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### **2.2 Nature of the Business**

UniCONN offers integrated unified messaging outsourcing services through its globally networked unified messaging servers for business and consumer subscribers worldwide. UniCONN's objectives are subscribers and recurring service revenues from its subscribers.

For business subscribers, UniCONN's unique integration technology with legacy corporate PBX systems allows it to provide world's first corporate unified messaging outsourcing services. Corporations can outsource all of its unified messaging needs to UniCONN who will derive lucrative recurring revenues from the business subscribers.

For consumer subscribers, UniCONN's technology and business models are designed to capture a vast number of messaging service subscribers worldwide through a combination of free services and pay services marketed through established service providers. The free services and pay services are usually integrated with the subscribers' existing pager, cellular telephone number and e-mail account (POP or web email) for added convenience.

UniCONN develops and owns its technologies and continues to enhance its technologies to differentiate from the competitions and to gain an increasingly larger number of consumer and business subscribers worldwide. The technology leadership in the areas of integration with legacy communication equipment, networking POP technology and unified messaging outsourcing allows UniCONN to be uniquely positioned as the leader in globally networked unified messaging with the largest subscriber base and best revenue potential.

### **2.3 Business History**

UniCONN was founded in December 1997 by Carmel Connection, Inc. and Linux Systems Ltd. Both companies contributed technologies totaling \$1 million to UniCONN.

Two Silicon Valley VCs (Investor and Maton Venture) each invested \$300,000 for a total of \$600,000 of Preferred A fund to get UniCONN off the ground. The funding was designed to last the company approximately 6 months.

UniCONN delivered its first SCP product within 6 months of operation and secured established accounts in Asia including China Telecom Hong Kong, HCD of Taipei and China Online in China. Most of the revenues came from fax store-and-forward services and the company has acquired significant experience in running global messaging services. UniCONN's financial results far exceeded the original projection and its expenses were significantly under the original projection. The management team has proven its ability to consistently exceed targets, manage expenses and increase the company's valuation.

Preferred B round concluded in November 1998 and the company's valuation doubled from \$0.25/share in Preferred A to \$0.50/share in Preferred B. Both existing VCs continued to participate in Preferred B by each investing an additional \$600,000. A new investor Vernon International of Hong Kong also invested \$600,000, bringing the total cash investment to \$1,800,000 in Preferred B. Carmel Connection, Inc. also sold its CCP technology to UniCONN for \$1,000,000 payable in 5-year installment of either \$200,000 cash or 400,000 shares of UniCONN common stocks per year (UniCONN has sole discretion on whether to pay Carmel Connection, Inc. in cash or stocks). The first payment of \$200,000 was made in cash November 30, 1998. There are 4 payments left beginning from November 30, 1999.

Also in the Preferred B round, UniCONN acquired Linux Systems Ltd. by substantially acquiring all of its assets for \$1.5 million with 3 million shares of UniCONN common stocks. The original UniCONN stocks held by Linux Systems Ltd. were evenly distributed to its three founders along with the new shares from the acquisition.

Following the Preferred B round, the company began an aggressive campaign to recruit key employees and set up international offices and representative offices. The number of employees grew from 2.5 in November 1998 to 19 in Q3, 1999. Three international offices have been set up in Taipei, Hong Kong and ShenZhen China. Representative offices have been set up in Tokyo and Seoul. First large scale SCP installation with 219,000 registered subscribers was completed at First International Telecom in Taipei. Service agreements with Alphacall Paging in Taipei (825,000 subscribers), Seednet in Taipei (650,000 subscribers), China Telecom Guomai Skytel Paging (200,000 subscribers) and a trial agreement with Verio in the US have been signed. Negotiations with other key accounts in Japan, Hong Kong, Singapore, Australia, UK and USA are also in progress.

## 2.4 Uniqueness

UniCONN differentiates from the competitions in the following ways:



- **The World's First Corporate Unified Messaging Outsourcing Service**

Through UniCONN's PBX integration and networking/POP technology, corporate users can subscribe to UniCONN's unified messaging outsourcing services without investing in any expensive on-premise messaging equipment. Corporate users can continue to enjoy the full benefits of a PBX-integrated messaging product such as message waiting light notifications on extensions even though the messages are actually safely kept at one of UniCONN's SCP servers (Message Data Centers) off-premise. Corporate users can manage the messages from the web, any e-mail client or participate in other UniCONN services such as Roaming Access.

There is significant barrier to entry for this uniqueness because it would require the competitors to possess the technical know-how for voice mail integration with a large variety of corporate PBX and Key Telephone Systems in use today. UniCONN has ownership of this know-how from the purchase of CCP technology from Carmel Connection, Inc. during the Preferred B round. It took Carmel Connection, Inc. nearly 10 years to collect the know-how to integrate with a large number of popular corporate PBX or Key Telephone Systems.

Most importantly, UniCONN's corporate subscribers can use their office voice mailbox as their unified messaging mailbox without having to subscribe to an independent outside mailbox number for their unified messaging needs.

- **Global Company, Global Presence and Global Vision**

UniCONN is a global company with global partners and a global network. UniCONN's global presence allows it to uniquely offer a set of new global message communication services which none of the competitions can offer for lack of a nationwide or global network. Through the UniCONN global network, messages can be deposited or retrieved anywhere from any SCP POP via a telephone or PC.

The global network significantly raises the barrier to market entry because it takes significant resources and time to build up such a network. Most of the competitions are focused at the US or a particular region or country overseas and most of the competitors' messaging services are standalone and non-networked.

- **Beyond Unified Messaging**

UniCONN offers a host of globally networked message communication services on top of its network-based unified messaging platform. Through this network, UniCONN is able to offer new services such as Mailbox Networking, Roaming Access and Global Access that none of the competitions can offer.

- **Transform Existing Mailbox into Unified Messaging Mailbox**

UniCONN's unique integration technology which provides seamless integration with legacy paging or cellular phone equipment allows a pager subscriber or a cellular phone subscriber to use his/her existing pager voice mailbox or cellular phone mailbox as his/her unified messaging mailbox. Almost all of the competitions offer unified

messaging through an independent telephone number or account number. The competitors' approach is laborious and requires the subscriber to remember yet another phone number. UniCONN's integration technology can, for example, turn a subscriber's pager number into a personal fax number. Reusing the subscriber's existing voice mailbox increases user convenience and results in greater acceptance of the services.

For corporate users, UniCONN's PBX integration technology allows corporate users to continue to use their existing office voice mailbox as their unified messaging mailbox without having to remember another mailbox number.

- **Networking/POP Technology**

UniCONN's unique networking technology allows all of the UniCONN mailboxes worldwide to be networked. Furthermore, the actual storage location of the subscribers' messages becomes transparent as the messages can be physically located at any one of the UniCONN's worldwide SCP servers (Message Data Centers) which are typically kept at co-location facilities. Through UniCONN's unique POP (Point Of Presence) technology, any messages (voice, fax or email) can be deposited at any SCP POP and be instantly retrieved from any other SCP POP anywhere in the world. POPs can be viewed as a way to access the UniCONN Network from a telephone or fax machine anywhere in the world. The model is "Any POP in, any POP out". The POP technology allows the UniCONN Network to be set up rapidly without regards to the actual physical storage location of the messages.

The Networking/POP technology allows for infinite scalability of the UniCONN Network in terms of portage, storage capacity and number of subscribers supported.

- **Largest Subscriber Base**

UniCONN is the world's largest global unified messaging service outsourcer with a total of 1,400,000 registered subscribers worldwide. This subscriber base is growing rapidly due to UniCONN's unique technology to integrate with partner service providers' legacy communication equipment such as those in use at paging companies, cellular phone companies or ISPs. The partner service providers manage free or pay UniCONN messaging services to all of the partner service providers' existing subscriber base. Each partnership with an established service provider will generally add about 200,000 to over 1,000,000 mailboxes to UniCONN.

- **Largest Revenue Potential**

UniCONN's focus to provide integrated unified messaging services for business and consumer subscribers provides the best opportunity to generate service revenues in the unified messaging market. Contrary to most non-integrated (and therefore free) unified messaging services in the market today, consumer and business subscribers are willing to pay for integrated unified messaging services.

For business subscribers, the revenues will come from corporate users who subscribe to unified messaging outsourcing services. The revenue sources will be recurring mailbox

fees which average about \$20 per month per mailbox. Additional revenues will be derived from corporate users who subscribe to UniCONN Network Services such as Roaming Access, Mailbox Networking and Global Access. For consumer subscribers, the revenue sources will be monthly mailbox fees and revenue sharing from advertisement, connection times, CPP (Calling Party Pays), and minimum revenue guarantees.

- **Worldwide Network**

UniCONN has a total of 27 Points of Access (i.e., local phone numbers) through its worldwide SCP POPs. UniCONN is planning to have a total of 50 Points of Access by end of 1999 and over 100 Points of Access by the end of 2000. These POPs providing local telephone access work in tandem with the SCPs deployed at the service providers' location to form a powerful worldwide network unmatched by any other messaging services available. This worldwide network makes possible unified messaging outsourcing services, networked unified messaging services and additional value-added services such as Mailbox Networking, Roaming Access and Global Access.

## **2.5 Products/Services**

### **2.5.1 Current Products/Services**

The current product offerings consist of CCP Version 4.0, SCP Release 3.0 and its associated UniCONN services.

#### **2.5.1.1 SCP and SCP POP Services**

The SCP equipment is a high-capacity scaleable voice/fax server with web (HTML) and e-mail capability. Each SCP module supports a maximum of 60 telephony ports (voice and fax) and multiple modules can be cascaded together to support up a maximum of 1200 ports of voice or fax communications in a single node. Multiple nodes can be deployed to form an infinitely scaleable architecture. The SCP supports a variety of telephony signaling including analog, T1, E1 and ISDN PRI. A high-speed Ethernet adapter card is used for Internet connectivity. The SCP is based on a distributed architecture that provides for modular expansion and global networking.

The SCP can be physically located at the location of the service providers or co-located at a co-location facility in a major city. Customizable interface with service providers' existing telecommunication equipment is available to achieve seamless integration of UniCONN messaging services with the service providers' existing services. A remote access capability allows remote diagnostics and maintenance from UniCONN' support centers worldwide.

UniCONN develops and owns the entire SCP messaging technology. The SCP server is based on the Unix platform for mission critical applications. The SCP hardware consists of industry-standard voice/fax processing boards and fault-tolerant industrial grade computers.

A scale-down lower-cost model of the SCP can be used as an SCP POP (Point of Presence) if there are no subscribers registered at the SCP POP. In this case, the SCP POP simply serves as a telephone access point for voice and fax messages to be deposited or retrieved from the UniCONN Network. SCP POPs generally do not have high-end storage capacity or complete e-mail or HTML capabilities. These SCP POPs communicates with a designated full-scale SCP to complete all the messaging communication needs. The SCP POPs (full-scale or scale-down) are owned and operated exclusively by UniCONN to serve as the Points of Access to the UniCONN Network.

#### **2.5.1.1.1 Message Send/Retrieval from Telephone**

The UniCONN Network allows voice and fax messages to be sent by anyone from any of the SCPs (and SCP POPs) and retrieved by UniCONN subscribers from any of the SCPs (and SCP POPs) by telephone anywhere in the world. For example, a caller in Tokyo can dial into the Tokyo SCP POP and send a fax to a UniCONN mailbox subscriber in San Jose, California. Voice messages can be retrieved by telephone and fax messages can be retrieved by calling from a fax machine (1-call fax retrieval) or from a telephone and entering the nearest fax machine number. E-mail can also be retrieved by telephone and e-mail content can be re-directed to a designated fax machine.

There are three major services available:

- **Mailbox Networking**  
Mailbox Networking service allows a UniCONN subscriber to send a voice or fax message to another UniCONN subscriber anywhere in the world. The mode of operation resembles that of sending an email except that in this case, the sender and the recipient do not need to have PCs to send and retrieve messages.
- **Global Access**  
Global Access service allows any caller (even non-subscribers) to place a local call to the nearest SCP POP and send a voice or fax message to a UniCONN subscriber anywhere in the world. Global Access can be bundled with many telecommunication services. For example, Global Access can be packaged with paging services to provide worldwide paging. Global Access also provides worldwide toll-free messaging for subscribers.
- **Roaming Access**  
Roaming Access service allows a UniCONN subscriber who travels to a different location to retrieve voice or fax messages received at the subscriber's home location by making a local call to the nearest SCP POP. The roaming UniCONN subscriber can process his/her messages and change mailbox profile data as if s/he were logged on to his/her home mailbox.

### **2.5.1.1.2 Message Send/Retrieval from the web**

For subscribers who have PCs, all of the subscribers' voice and fax messages can be retrieved from the UniCONN web site at [www.uniconn.com](http://www.uniconn.com). The subscriber simply enters his/her mailbox number and password at the web site and can immediately view all of the fax messages on the PC screen and listen to all of the voice messages from the PC's speakers. Standard browser programs are supported including Netscape Navigator and Internet Explorer. The UniCONN technology allows the voice or fax messages to be retrieved from a web browser without needing any special viewer program or plug-ins. This feature is generally referred to as voice to web and fax to web. Subscribers can also save, delete, forward and distribute voice and fax messages from the web interface.

The browser interface is fully synchronized with the telephone interface so that if a message is deleted or saved from a browser interface, then the same message will be deleted or saved from the telephone interface.

### **2.5.1.1.3 Message Send/Retrieval from E-mail**

For subscribers who have PCs, all of the subscribers' voice and fax messages can be retrieved from the subscribers' e-mail client program such as Microsoft Outlook. Therefore the subscribers can continue to use the same familiar message retrieval interface offered by the e-mail client but be able to retrieve voice and fax messages as e-mail attachment. This feature is generally referred to as voice to email or fax to email.

The UniCONN technology allows the voice or fax messages to be retrieved as e-mail attachment without needing any special programs.

For the IMAP4 compliant e-mail client programs, the e-mail interface is fully synchronized with the telephone interface so that if a message is deleted or saved from a e-mail client, the same message will be deleted or saved from the telephone interface.

### **2.5.1.1.4 Sending a Voice Message (Voice Anywhere)**

A subscriber can record a voice message from any SCP and address it to anyone (any telephone) in the world. This service is called "Voice Anywhere". The voice message is routed by the UniCONN Network to the SCP POP closest to the recipient's location and delivered by the local SCP POP by making a local call via the PSTN to the recipient.

Voice Anywhere has many commercial applications such as voice message broadcast, scheduled message delivery, etc.

### **2.5.1.1.5 Sending a Fax Message (Fax Anywhere)**

A subscriber can send a fax from any SCP and address it to anyone (any fax machine) in the world. This service is called "Fax Anywhere". The fax is routed by the UniCONN

Network to the SCP POP closest to the recipient's location and delivered by the local SCP POP to the recipient's fax machine by making a local call via the PSTN.

Fax Anywhere is sometimes known as fax store-and-forward or Internet fax services.

### **2.5.1.2. CCP POP Services**

Similar to the concept of SCP POP, the corporate unified messaging outsourcing is a service based on a product called the "CCP POP". The CCP POP is a PC with Dialogic voice and fax processing components. The CCP POP is physically installed at the corporate customer premise behind the corporate PBX and acts as a message gateway between the corporate premise and the UniCONN Network. The CCP POP provides full PBX integration and manages the message flow between the customer premise and the UniCONN Network which manages and stores all the corporate voice and fax messages.

The CCP POP together with the UniCONN Network eliminates the need for corporate customers to purchase expensive on-premise unified messaging equipment while providing corporate customers leading edge unified messaging services powered by the UniCONN Network.

Specifically, all of the corporate subscribers' voice and fax messages are stored at a designated SCP server in a co-location facility instead of the customer premise. Incoming voice or fax messages are received at the CCP POP at the customer premise behind the corporate PBX and immediately sent to the designated SCP server via the Internet. Voice and fax messages can be accessed from the corporate subscriber's office extension by placing intercom calls to the CCP POP which retains a local copy of the corporate subscriber's voice and fax messages.

Voice or fax message retrieval from the PC (via either an e-mail client program or a web browser) is provided by the UniCONN Network. Furthermore, corporate subscribers can also manage their mailbox configurations (such as password change, configuring message waiting notification to a pager, etc.) directly from a web browser. Corporate subscribers can forward, save and delete voice messages from the PC just as they can from a telephone. All popular web browser programs such as Netscape or Internet Explorer are supported without any needs for special plug-in programs or viewer programs.

Advanced UniCONN Network Services including Roaming Access, Global Access, Mailbox Networking, Voice Anywhere and Fax Anywhere services can be optionally enabled for corporate subscribers to subscribe. The CCP POP provides an ideal way to extend UniCONN Network Services to corporate subscribers.

The CCP POP is scheduled to enter Beta trial in early September.

## **2.5.2 Future Products/Services**

Future products and services will include additional features to enhance the local and global communications for business subscribers, consumer subscribers and non-subscribers. The following features are planned:

### **2.5.2.1 Message Type to Include Video**

Video will be another type of multi-media messaging format supported on the UniCONN Network in addition to voice, fax and e-mail. UniCONN subscribers will be able to receive still pictures and movies in their mailboxes. There is a huge commercial potential for video based messaging and delivery service.

### **2.5.2.2 Text-to-Speech**

Text-to-speech (TTS) capability will be added to support the voice retrieval of e-mail messages from a telephone. This will be useful for users to retrieve e-mail without a PC or a fax machine. A TTS prototype is currently available and will be enhanced to be commercially viable.

### **2.5.2.3 Cellular Integration**

With cellular integration, the SCP can integrate with existing cellular communication equipment including short message gateway devices, legacy cellular voice mail equipment (such as those offered by Octel and Comverse) and SS7 signaling. Cellular subscribers are rapidly increasing throughout the world and UniCONN intends to capture the cellular subscribers by providing them with integrated and networked global messaging services.

### **2.5.2.4 IP Switch Integration**

In addition to integration with conventional PBX or Key telephone systems, the CCP POP products will be enhanced to support full integration with IP switches via industry standard TCP/IP based protocols. This level of integration will allow the CCP family of products to continue to evolve with the latest IP technologies.

## **2.6 Customers of the Products/Services**

### **2.6.1 CCP Business Customers**

The unified messaging outsourcing service via the CCP POP is designed for corporate customers of all sizes. The value proposition of an outsourced unified messaging model versus an on-premise unified messaging equipment (see Section 2.7.3.2 below) appeals to any corporation who can benefit from a 50% savings in managing and maintaining unified messaging capabilities. Market research shows more than 95% of US

corporations do not have unified messaging and do plan to provide unified messaging to their employees within the next 5 years.

**Companies with less than 100 employees**

Smaller companies have as much a need for unified messaging as larger companies. The smaller the company, the more sensitive the company will be to cost. Paying for an on-premise messaging equipment in the low to mid 5-digit range usually requires a decision at the CEO or owner's level and often requires major cost justifications even with the aid of an equipment leasing program. For companies with less than 10 employees (or SOHO market), there is no cost effective unified messaging equipment available and subscribing to unified messaging services is the only viable option. Branch offices of a larger corporation will also be ideal candidates to subscribe to unified messaging outsourcing services not only because of the need to have unified messaging but also the need to communicate with other branch offices and headquarters.

**Companies with 100 to 1000 employees**

Mid-size companies begin to face with the mounting cost of administering and managing an on-premise unified messaging equipment. These types of companies usually have to deal with unpredictable cost of managing and maintaining an on-premise unified messaging equipment. Because there may not be a dedicated IT or MIS department, there usually are no trained personnel on-site to administer and support a sophisticated unified messaging equipment. There tends to be increasing dependencies on the resellers of unified messaging equipment to provide support and equipment maintenance which translates to higher cost. Outsourcing the corporation's unified messaging needs provides a very cost effective way for mid-size companies to manage the cost of maintaining unified messaging while allowing the companies to focus on their core businesses. This is a primary market segment for corporate unified messaging outsourcing.

**Companies with more than 1000 employees**

Larger companies and Fortune 1000 companies usually have dedicated IT or MIS department responsible for the selection, on-going management and maintenance of telecommunication equipment. In this market segment, messaging equipment is usually dominated by Lucent (Octel) and Nortel equipment at a very expensive price. Larger companies have to re-train their IT or MIS department to be experienced with administering and maintaining a sophisticated unified messaging equipment. The outsourcing value proposition will be appealing to any large size companies who wish to save 50% in the management and maintenance of unified messaging equipment. This will be a secondary market segment for corporate unified messaging outsourcing.

## **2.6.2 SCP Consumer and Business Customers**

UniCONN services are targeted at both the consumer users and the business users worldwide.

The consumer users targeted are:



- **Cellular phone subscribers**

Cellular phone users subscribing to UniCONN services can receive voice or fax messages from anywhere in the world and be immediately notified of message waiting via short message (SMS) on the cellular phone display. Voice or fax messages received in a cellular subscriber's mailbox can be retrieved from a PC (via web or e-mail client) or by telephone from any SCP POP throughout the world. Cellular subscribers can also subscribe to other UniCONN services such as Mailbox Networking to satisfy a variety of domestic or international communication needs. A cellular subscriber's UniCONN mailbox number is the same as his/her cellular phone number.

- **Pager subscribers**

Pager users subscribing to UniCONN services can receive pages, voice messages or fax messages from anywhere in the world and be immediately paged of message waiting conditions. Pager subscriber can also use their existing pager number as his/her personal unified messaging mailbox number. Anyone in the world can dial the subscriber's pager number and send a fax or a voice message to the subscriber. The subscriber's pager number is enhanced into a never-busy and never-out-of-paper fax machine with complete privacy. Voice or fax messages can be retrieved from a PC (web or e-mail client) or any SCP POP throughout the world. Pager subscribers can also subscribe to other UniCONN services such as Mailbox Networking to satisfy a variety of domestic and international communication needs. A pager subscriber's UniCONN mailbox number is the same as his/her pager number.

- **ISP subscribers**

ISP users subscribing to UniCONN services can receive a UniCONN mailbox number which can be a DID (Direct Inward Dial) phone number or an extension (PIN) number off a main access telephone number. Anyone in the world can dial the subscriber's assigned mailbox number and send the subscriber a voice or fax message. Voice or fax messages can be retrieved from a PC (web or e-mail client) or by telephone from any SCP POP throughout the world. ISP subscribers can also subscribe to other UniCONN services such as Mailbox Networking to satisfy a variety of domestic and international communication needs.

- **Portal subscribers**

Portal users subscribing to UniCONN services can enjoy all of the benefits of an ISP subscriber subscribing to UniCONN services. Portal users usually have a web e-mail account offered by the portals and portal users can check their e-mail at the same time they check their voice or fax messages from the web.

The consumer users are designed to increase UniCONN's global messaging market share.

The business users targeted are:

- **Business travelers**

Business users who travel domestically or internationally can subscribe to Roaming Access for voice, fax and email message retrieval and sending from anywhere in the world from a telephone or PC. Business users who carry pager or cellular phones can also benefit from the consumer services designed for pager or cellular subscribers as described earlier.

- **Business unified messaging users**

Business users can subscribe to UniCONN services to manage all of their voice, fax and e-mail messages in one place. Messages can be retrieved, deleted, forwarded and distributed to groups from any telephone or PC in the world. Mailbox configurations can be managed directly from the web.

- **Business users with geographically diverse branch offices**

Business users who need to communicate with branch offices located domestically or internationally can save money and time by subscribing to the Mailbox Networking service. Through this service, business users can enjoy unlimited voice messaging and fax messaging between branch offices for a fixed monthly fee.

Business users are expected to contribute the majority of UniCONN's service revenues.

UniCONN services are targeted at US and international consumer users and business users for their everyday local and global communication needs. Some UniCONN services do not require any PC or Internet knowledge to operate while other UniCONN services are designed specifically for more advanced users who have PCs.

## 2.7 Marketing

### 2.7.1 Unified Messaging Market

Forrester Research published the following data for US unified messaging market:

1998	Fewer than 1 million mailboxes
1999	5 million mailboxes
2002	40 million mailboxes

International Data Corporation (IDC) projects US end user revenues from unified messaging services to grow from \$7.6 million in 1998 to \$1.9 billion by 2003.

Forrester Research defines a unified messaging mailbox as "Internet-based integrated message inboxes". IDC defines unified messaging as "scenarios in which the user can retrieve messages through a phone and a web-connected PC".

The unified messaging market in the US and abroad is without any doubt undergoing a very rapid growth rate. Business and consumer users are becoming more aware of the benefits of managing all message types from one source and are planning to migrate from the traditional voice mail equipment or services to unified messaging equipment or services.

For business users, the trend is for corporations to upgrade to unified messaging when their traditional voice mail equipment reaches the end of its life cycle (7 years) and becomes obsolete.

For consumer users, the trend is to demand more value added unified messaging services which can be integrated with their home telephone, pager, cellular telephone or Palm devices.

## **2.7.2 Business Models**

UniCONN's messaging outsourcing models are designed to recruit a large number of pay business subscribers in the US corporate market and a massive number of free and pay consumer subscribers worldwide. The messaging service pricing is based on a per mailbox flat-fee scheme, following the prevailing pricing scheme used for e-mail and Internet services.

### **2.7.2.1 SCP Service Model 1 – Co-located SCP**

In this model, the SCP equipment is physically located at the service provider's facility so as to achieve seamless integration of the UniCONN services to the service provider's existing services. In most cases, there will be minor engineering modifications both on the SCP and on the service providers' equipment to achieve this degree of service integration. For example, SCP equipment designed for use with paging providers, cellular phone providers and some ISPs fall in this category.

In most cases, the SCP equipment will be loaned free of charge to the service providers. Pure SCP equipment sales will be rare. In return, UniCONN will charge the service provider a fixed per mailbox fee, share the service revenues generated from UniCONN services with the providers or both. UniCONN will also require from the service provider a minimum revenue guarantee proportional to the list price of the SCP equipment. The intent of the minimum revenue guarantee is to ensure UniCONN does not supply service providers an infinitely large configuration of the SCP equipment. The minimum revenue guarantee is designed for UniCONN to recover the cost of the SCP equipment in 8 to 10 calendar months. The following is a summary of this model:

- UniCONN provides SCP equipment free of charge to service providers. UniCONN retains ownership of the SCP equipment.
- UniCONN requires the service provider to provide a minimum revenue guarantee each month. The minimum revenue guarantee is negotiable and is usually 1% to 3%

of the list price of the SCP equipment. If the service provider fails to generate sufficient revenue to meet the minimum revenue guarantee in a given month, then the service provider will still be required to pay UniCONN this amount. A grace period for minimum revenue guarantee is usually extended for up to 3 months to get the service provider up to speed.

- The intent of the minimum revenue guarantee is intended for UniCONN to recover the cost of the SCP hardware in 8 to 10 months.
- The service provider is required to register all or a majority of their existing subscribers to receive a UniCONN mailbox. Free UniCONN mailbox services will be offered to all or a majority of the providers' existing subscribers. Pay UniCONN mailbox services will be offered to premium or business users in the providers' subscriber base. UniCONN works with service providers to package free UniCONN services and pay UniCONN services.
- For UniCONN Network Services (services which require resources from UniCONN's worldwide SCP POPs. See Section 2.7.4 Service Packaging for definitions), UniCONN will collect from the service providers a minimum fee of USD\$2 per month per mailbox plus UniCONN's margins. \$2 per mailbox is the estimated cost to UniCONN of maintaining the worldwide network of SCP POPs. This guideline is used to negotiate pricing with service providers for UniCONN Network Services. For UniCONN Local Services (services which do not involve message data transport over the UniCONN Network. See Section 2.7.4 Service Packaging for definitions), the service providers are free to set their own pricing based on local market conditions.
- UniCONN shares 50% of the revenues (not profits) collected by the service providers as a result of operating UniCONN services. UniCONN may also choose to charge a fixed monthly per mailbox fee.
- The service providers are responsible for all marketing, promotion, billing and customer support cost. UniCONN is responsible for maintaining the SCP equipment including defect repair and software upgrade.
- The service providers are responsible for all Internet and telephone line cost.
- If engineering integration is required between the SCP and the service providers' existing legacy equipment, UniCONN and the service provider will each be responsible for the engineering customization cost incurred.
- Service providers are required to use the UniCONN logo when offering UniCONN services to their subscribers. Co-branding with service providers' own logo is allowed.

### **2.7.2.2 SCP Service Model 2– SCP POP**

In this model, a designated SCP POP is used to host UniCONN services for service providers. This may be the case where there is no need for the SCP equipment to be physically located at the service provider's location while achieving the same degree of service integration. For example, SCP equipment designed for use with certain ISPs or portals may fall into this category.

The SCP POPs are owned and operated exclusively by UniCONN which has complete control over the configuration and capacity management (telephone lines and Internet bandwidth) of each SCP POP.

By allowing the service providers to use a designated SCP POP and its resources for the service providers' subscribers, UniCONN will share the service revenues generated from UniCONN services with the providers, charge the service providers a fixed monthly per mailbox fee or both. UniCONN will also require from the service provider a minimum revenue guarantee which is proportional to the list price of the SCP equipment and the recurring cost of operating the designated SCP POP. The intent of the minimum revenue guarantee is to ensure UniCONN does not allocate a disproportionately large amount of resources at the designated SCP POP for this service provider. The minimum revenue guarantee is designed for UniCONN to partially recover the cost of the SCP equipment and to cover the recurring cost of operating the SCP POP. The following is a summary of this model:

- UniCONN designates a specific SCP POP to host UniCONN services for the service provider.
- UniCONN requires the service provider to provide a minimum revenue guarantee each month. The minimum revenue guarantee is negotiable and is proportional to the amount of resources (cost of the SCP POP hardware and recurring cost of operating this SCP POP) allocated to the service provider from this SCP POP. If the service provider fails to generate sufficient revenue to meet the minimum revenue guarantee in a given month, then the service provider will still be required to pay UniCONN this amount. A grace period for minimum revenue guarantee is usually extended for up to 3 months to get the service provider up to speed.
- The service provider is required to register all or a majority of their existing subscribers to receive a UniCONN mailbox. Free UniCONN mailbox services will be offered to all or a majority of the providers' existing subscribers. Pay UniCONN mailbox services will be offered to premium or business users in the providers' subscriber base. UniCONN works with service providers to package free UniCONN services and pay UniCONN services.
- For UniCONN Network Services (services which require resources from UniCONN's worldwide SCP POPs. See Section 2.7.4 Service Packaging for definitions), UniCONN will collect from the service providers a minimum fee of USD\$2 per month per mailbox plus UniCONN's margins. \$2 per mailbox is the estimated cost to UniCONN of maintaining the worldwide network of POPs. This guideline is used to negotiate pricing with service providers for UniCONN Network Services. For UniCONN Local Services (services which do not involve message data transport over the UniCONN Network. See Section 2.7.4 Service Packaging for definitions), the service providers are free to set their own pricing based on local market conditions.
- UniCONN shares 50% of the revenues (not profits) collected by service providers as a result of operating UniCONN services. UniCONN may choose to also charge a fixed monthly per mailbox fee.

- The service providers are responsible for all marketing, promotion, billing and customer support cost. UniCONN is responsible for maintaining the SCP POP equipment including defect repair and software upgrade.
- If engineering integration is required between the SCP POP and the service providers' existing legacy equipment, UniCONN and the service provider will each be responsible for the engineering customization cost incurred.
- Service providers are required to use the UniCONN logo when offering UniCONN services to their subscribers. Co-branding with service providers' own logo is allowed.

### **2.7.2.3 CCP Service Model – CCP POP**

The CCP service model is based on the concept of corporate unified messaging outsourcing. This is a model where corporate customers no longer have to invest in expensive on-premise unified messaging equipment. By subscribing to UniCONN's corporate unified messaging co-location services, corporate users can continue to enjoy all the benefits of an on-premise CPE (Customer Premise Equipment) messaging equipment with full PBX integration but without the up-front equipment purchase cost, equipment maintenance cost, support cost, and the reality of quick technology obsolescence.

This model offers the corporate customers the following benefits:

- No equipment to purchase
- No equipment to maintain
- Up to 50% cost savings overall
- Productivity increase from greater reliability and reduced downtime
- Archive services for corporate voice and fax messages
- Low monthly mailbox fee
- Easily upgradable to new services as technology improves
- Preserve the investment of corporate PBX
- Full access to UniCONN Network Services such as Mailbox Networking, Roaming Access or Mailbox Networking

This model offers UniCONN the following benefits:

- Secure corporate mailbox users as UniCONN mailbox subscribers
- Derive higher service revenues from business mailbox subscribers
- Share the cost of the SCP POPs used for message co-location

#### **2.7.2.3.1 Outsourcing is the Trend**

Outsourcing is a major trend in the corporate world. Companies today want to focus on their core business and are increasingly willing to outsource technologies, products and services to external organizations. Common outsourcing practices include web, e-mail, manufacturing, software, personnel, etc. Companies have come to recognize there is significant value to have technologies, products and services managed by external

organizations. The economies of scale at outsourcing companies allow the service cost to be sufficiently low to make the services attractive to the subscribers.

Companies today demand reliable, consistent, scaleable and instantly-serviceable corporate messaging infrastructures. Similar to how companies today “outsource” electricity and telephone services, corporate messaging is becoming another key area for outsourcing. As the technologies become more complex, more and more companies of all sizes are choosing to outsource in order to reduce administration and management cost in order to focus on their core competencies.

There are many successful public companies offering outsourcing services for corporate customers.

**Critical Path** offers e-mail outsourcing for 1.4 million subscribers including America-Online and many high profile corporate customers. It has a market capitalization of \$1.3 billion.

**Compaq** offers Microsoft Exchange outsourcing for US corporate customers. 25% of the Microsoft Exchange seats worldwide are outsourced by Compaq.

**US Internetworking** offers application and software (APS) outsourcing for corporate users. It has a market capitalization of \$0.8 billion.

**Sun Microsystems** announces plans at end of August, 1999 to provide application hosting (or outsourcing) services for subscribers to access a suite of office software via the Internet. The business models include free services to the end subscribers by charging the ISPs for the services and directly charging the end subscribers. **Microsoft** immediately announces plans to evaluate the office software outsourcing strategies in order to be competitive.

Furthermore, the GartnerGroup predicts (June, 1999) that unified messaging adoption in the corporate market will be mainly through outsourcing until 2003 when the unified messaging on-premise equipment becomes more mature. The GartnerGroup also predicts that existing corporate voice mail hardware and software will become obsolete beginning in 2003. This means that UniCONN has approximately a 4-year market window to be the first and leading player to capture a significant portion of the corporate unified messaging market. UniCONN will continue to offer new messaging and communication services for corporate customers to retain the existing corporate customer base and to grow new corporate customers.

### 2.7.2.3.2 Value Proposition

UniCONN offers a company the following value proposition in unified messaging outsourcing:

**Proven Methodology**

UniCONN is uniquely qualified to be the unified messaging outsourcer for corporations of all sizes. As the world largest global unified messaging service outsourcer with over 1 million subscribers and a worldwide network with 27 Points of Access, UniCONN is uniquely qualified to provide a reliable, robust and proven messaging network for corporate subscribers. UniCONN's authorized resellers will assist the customers with the entire outsourcing process beginning from a survey of customer's current communication infrastructure including PBX, e-mail server and other IT systems, installation and integration with customer's existing equipment, test and verifications, full-scale deployment, training and operation management.

**Rapid Deployment of Services**

As soon as a corporate customer makes a decision to outsource, UniCONN will immediately make available the following resources to the customer:

- **Message Data Center:** UniCONN will immediately select a suitable SCP server in a co-location center to host the unified messaging mailboxes for the corporate users.
- **Help Desk:** UniCONN will immediately make available the services of its Help Desk to the corporate users.
- **Installation:** UniCONN will immediately schedule the installation of the CCP POP at the customer premise. The installation will be done through authorized resellers or installers.
- **Migration:** Special tools will be utilized to aid the migration from the customer's existing voice mail system to the UniCONN unified messaging services. This will be done through authorized resellers or installers.
- **Network Operation Centers (NOC):** As soon as the CCP POP unit is installed, the customer's messaging activities will be monitored on the UniCONN NOC which is operated on a 24X7 basis. Multiple NOCs are planned for different regions to provide better local support. There are currently two NOCs: one in the US (for US and European customers) and one in Hong Kong (for Asian customers).

**Predictable Cost**

Unified messaging outsourcing offers corporate customers affordable and predictable cost points. On the contrary, managing an in-house unified messaging system is often plagued with unpredictable cost due to technical or human errors, system malfunctions, and associated administration and support cost. Unified messaging outsourcing offers corporate customers totally predictable costs based on a flat per-user rate and Service Level Agreement (SLA) rates.

Industry studies have shown that the majority of direct messaging system costs are in the areas of system administration, management, support and training. Outsourcing relieves a corporation from these unpredictable cost elements by providing a much lower and completely predictable cost structure.

**Lower Total Cost of Ownership (TCO)**



UniCONN provides industry leading unified messaging services at a fraction of what it would cost to house an on-premise messaging equipment. Corporate customers no longer are responsible for the cost of equipment, hardware upgrade, software upgrade, equipment maintenance, administration, management, support, and training. Corporate customers can take advantage of UniCONN's cutting edge understanding of current and future messaging technologies. UniCONN's specialization and experiences in unified messaging plus UniCONN's economies of scale in providing messaging services directly translate into lower TCO for the corporate customers. Furthermore, the opportunity costs from the reduction in administration and management allows the administrator's efforts to be re-directed to other productivity enhancing tasks elsewhere within the organization.

**Maintain Existing IT Investment**

By outsourcing unified messaging with UniCONN, corporate customers can keep their existing investment in corporate telecommunication equipment such as PBXs, telephone sets and e-mail servers. UniCONN will provide an on-site CCP POP unit which integrates with corporate customers' existing PBX and IT equipment. There is no need for the corporate customers to replace any of their existing IT infrastructure.

**Maintain Control**

Corporate customers can set up and maintain unified messaging mailboxes themselves either directly over the on-premise CCP POP console or through the UniCONN web site. Administration changes take place instantly and making changes is easy and intuitive. The administrator does not need to be familiar with exiting corporate IT infrastructures or be knowledgeable with any other telecommunication equipment in order to administer the UniCONN unified messaging services.

**Better Reliability**

The UniCONN unified messaging co-location service offers greater reliability than a traditional on-premise messaging equipment for the following reasons:

**Message Redundancy**

The UniCONN CCP POP architecture allows two copies of each message to be stored at any one time. One copy is kept at the CCP POP hardware located at the customer premise. Another copy is kept at a designated UniCONN SCP in a co-location center (Message Data Center). Messages stored at a UniCONN Message Data Center are guaranteed to have a 99.8% up-time, which is significantly higher than traditional on-premise messaging equipment. In the event the CCP POP hardware goes down at the customer premise, corporate voice or fax messages can still be retrieved and sent from e-mail, web or telephone via any of the SCP POPs.

**Automated Fault Detection**

The CCP POP at the customer premise is constantly being monitored by its designated UniCONN SCP for proper operation. Any malfunction at a CCP POP will be automatically detected by its designated SCP and reported to the UniCONN Network Operation Center (NOC). A malfunction can be a network fault, CCP POP hardware

failure, or any other system faults that prevent message data from being received from the corporate PBX and transmitted to its designated SCP. UniCONN NOC will take immediate actions to correct the fault. On-site hardware repair will be done through a nationwide network of authorized installers.

### **2.7.2.3.3 Established Infrastructure and Proven Technologies**

Successful implementation of unified messaging co-location and outsourcing services for corporate customers requires the following key technology ingredients:

- PBX integration technology
- Networking/POP technology
- Worldwide Network

UniCONN has already established a worldwide infrastructure and developed technologies to support the unified messaging co-location model. The ubiquitousness of the Internet completes the model.

#### **PBX integration technology**

Corporate voice and fax messaging solutions require seamless integration between the messaging equipment and the corporate PBX. Due to the lack of standards in traditional PBXs, integration with PBXs requires highly specialized technical knowledge which UniCONN's founders have acquired from over 30 years of combined industry experiences. The CCP POP unit can integrate with over 50 PBX and Key Telephone systems including Lucent, Nortel, Mitel, Toshiba, Panasonic, Siemens/Rolm, NEC and many others. Ability to integrate with today's corporate PBXs is essential to penetrate corporate messaging market. Integration with corporate PBXs allows corporate users to use their office voice mailbox as the one and only unified messaging mailbox they will ever need. This level of integration brings major convenience to corporate users and generates values.

#### **Networking/POP technology**

Implementing corporate messaging outsourcing requires a proven networking technology to transport corporate voice and fax messages between the corporate premise and a designated message data center located in an off-site location. UniCONN's patent-pending networking/POP technology manages the message flow, control, load balancing, retrieval and deposit between the customer premise and the UniCONN Network. Corporate users can deposit and retrieve voice and fax messages from any of the SCP POP access points worldwide. The CCP POP is a natural extension of the POP technology where corporate users can use their office extensions to retrieve and send voice/fax messages by making intercom calls to their office CCP POP.

#### **Worldwide Network**

Successful corporate unified messaging outsourcing model must be backed by a solid worldwide network where corporate messages are stored, maintained, archived and

mostly importantly, readily made available for access by telephone or PC in the corporate office or anywhere in the world. The UniCONN Network today spans 27 Access Points in North America, Asia and Europe and is rapidly growing. Each UniCONN Message Data Center is powered by telco grade IP telephony servers with full redundancy for the safekeeping of corporate messages. The UniCONN Network is uniquely designed to support the unified messaging needs for corporations of all sizes. The UniCONN Network also serves as a backup for corporate message store in the event the corporate PBX or the CCP POP goes down.

#### **2.7.2.3.4 Service and Support**

##### **Worldwide Network Operation Centers (NOC)**

UniCONN currently maintains two Network Operation Centers (NOC) in San Jose, California, USA and in Hong Kong. More NOCs are planned in the future. The NOCs will be staffed with experienced technical and customer support personnel to constantly monitor the status of all CCP POPs and the UniCONN Network worldwide. Any abnormalities will be reported automatically to the NOC and corrective actions will be taken immediately by the support staff on-duty.

##### **CCP POP Hardware Support**

The CCP POP hardware at the corporate customer premise will be maintained via a number of contracted third-party nationwide installation and service companies. These companies typically are contracted to install the CCP POP hardware at the customer premise as well. These companies are generally nationwide or regional interconnect companies or voice mail system installers or resellers. They are selected and qualified by UniCONN to provide the corporate customers with the level of service and support required. Any CCP POP hardware malfunctions reported will be immediately reported to UniCONN's NOC and an authorized local service company will be dispatched to the customer site. The response time will depend on the Service Level Agreement (SLA) in place for the customer.

### 2.7.2.3.5 Cost Comparison

Below is a cost comparison between outsourced unified messaging service through UniCONN and a non-outsourced unified messaging equipment purchase. Unified messaging outsourcing through UniCONN can save corporate customers up to 50% in the first 5 years.

Assumptions<sup>1</sup>:

	Non-outsourced	Outsourced
<b>System Administrator cost</b>		
Mean administrator annual salary	\$80,000	\$80,000
Users supported per administrator	519	1 for all
Percent of time devoted to unified messaging	75%	10%
<b>Help Desk cost</b>		
Mean help desk annual salary	\$55,290	-
Users supported per help desk person	445	-
<b>Technical support cost</b>		
Mean technical support annual salary	\$76,939	-
Users supported per technical support person	494	-
<b>Other Assumptions</b>		
Hours per work year	2000	2000
Mean worker salary	\$50,000	\$50,000
Ratio of revenue generation to salary	2.8	2.8
Unified messaging equipment(100 users/seats) cost <sup>2</sup>	\$39,000	-
Unified messaging equipment(1000 users/seats) cost <sup>3</sup>	\$295,000	-
Equipment amortization schedule	5 years	-
Cost of borrowing money	10%	-
Annual unified messaging equipment maintenance	10% retail	-
UniCONN unified messaging mailbox fee per month <sup>4</sup>	-	\$20
Annual estimated down time	1900 minutes	1051 minutes <sup>5</sup>
Percentage of employees affected by downtime	38.9%	38.9%
Percentage of productivity reduction by downtime	26.2%	26.2%

<sup>1</sup>Data sources: Creative Networks, Inc., Palo Alto, CA unless otherwise specified

<sup>2</sup>Active Voice Unity with fax option retail price

<sup>3</sup>Lucent Octel with fax option retail price

<sup>4</sup>Suggested UniCONN unified messaging retail price

<sup>5</sup>UniCONN provides 99.8% up-time

*Case 1: 100 users*Administration and management cost:

The total annual administration (System Administrator, Help Desk and Technical Support) cost of an in-house managed unified messaging environment is:  
 $\$80,000 \times 75\% \times (100/519) + \$55,290 \times (100/445) + \$76,939 \times (100/494) = \$39,561$  or  
 \$396 per user. In an outsourced environment with one administrator and a monthly mailbox fee of \$20, the annual cost per user is:  
 $(\$80,000 \times 10\% \times (100/519))/100 + \$20 \times 12 = \$255$

Downtime productivity loss:

In an in-house managed unified messaging environment, the total cost of downtime per year is:

$$1900 \text{ minutes} \times 38.9\% \times 26.2\% \times \$50,000 / (2,000 \text{ hrs} \times 60 \text{ min/hr}) = \$81$$

In an outsourced unified messaging environment, the total cost of downtime per year is:

$$1051 \text{ minutes} \times 38.9\% \times 26.2\% \times \$50,000 / (2,000 \text{ hrs} \times 60 \text{ min/hr}) = \$45$$

Downtime revenue loss:

In an in-house managed unified messaging environment, the total revenue cost from downtime per year is:

$$\$81 \times 2.8 = \$227$$

In an outsourced unified messaging environment, the total revenue cost from downtime per year is:

$$\$45 \times 2.8 = \$126$$

**100-employee company annual unified messaging per user cost comparison**

Cost	Non-outsourced	Outsourced	Outsourced Savings
Administration and management cost	\$396	\$255	36%
Downtime productivity loss	\$81	\$45	44%
Downtime revenue loss	\$227	\$126	44%
Equipment amortization cost (year 1 to 5)	\$78	\$0	-
Equipment purchase interest cost	\$39	\$0	-
Equipment maintenance cost	\$39	\$0	-
Total (year 1 to 5)	\$860	\$426	50%
Total (year 6 and after)	\$782	\$426	46%

Annual cost savings during the first 5 years is \$43,400. Total cost savings for the first 5 years is \$217,000.

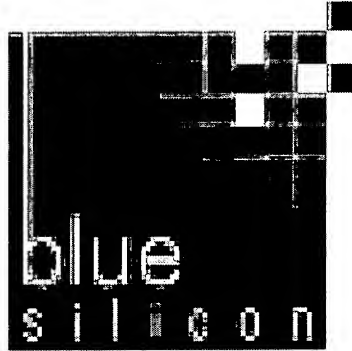
*Case 2: 1000 users*

The annual cost per user are identical to the 100-employee case described above except for the difference in cost of the equipment:

**1000-employee company annual unified messaging per user cost comparison**

Cost	Non-outsourced	Outsourced	Outsourced Savings
Administration and management cost	\$396	\$255	36%
Downtime productivity loss	\$81	\$45	44%
Downtime revenue loss	\$227	\$126	44%
Equipment amortization cost (year 1 to 5)	\$59	\$0	-
Equipment purchase interest cost	\$30	\$0	-
Equipment maintenance cost	\$30	\$0	-
Total (year 1 to 5)	\$823	\$426	48%
Total (year 6 and after)	\$764	\$426	44%

Annual cost savings for the first 5 years is \$397,000. Total cost savings for the first 5 years is \$1,985,000.



# **SCP Maintenance Requirements Document**

**March 31, 2000**

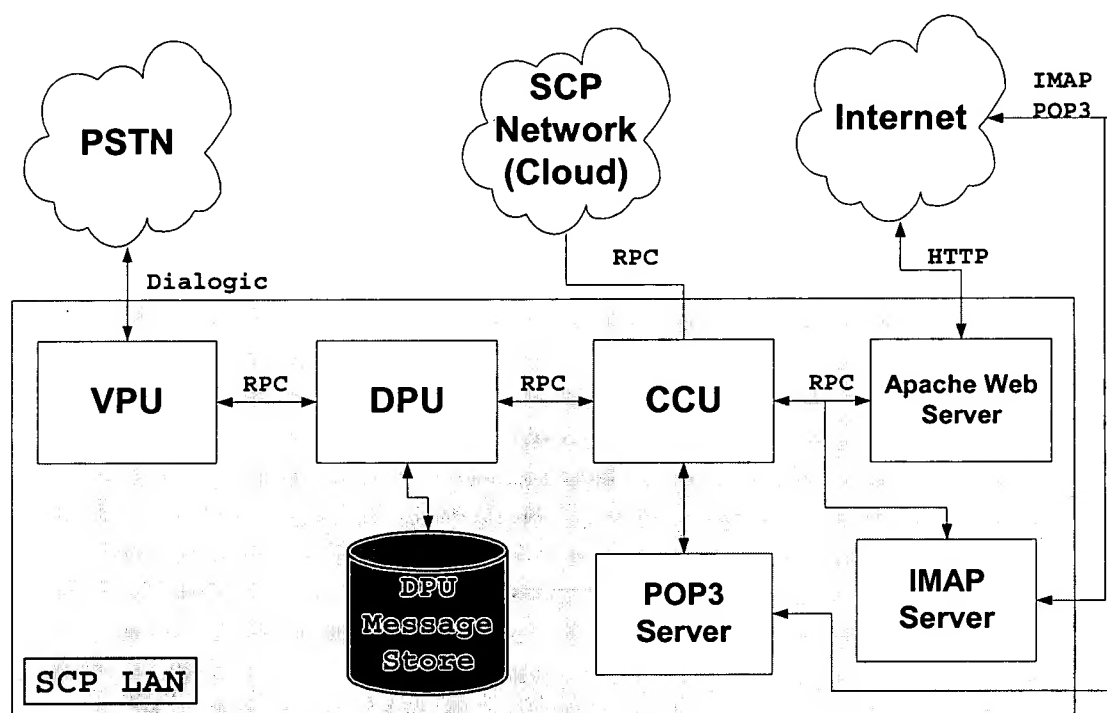
# 1. Introduction

The purpose of this document is to outline the requirements for the support and maintenance of the Blue-Silicon SP product. The intent is to negotiate with a consulting firm in China the taking over of the SCP maintenance and enhancements tasks planned for the next 6-12 months and in support of the June Launch of the Blue-Silicon service.

## 2. SCP Network Overview

### 2.1 SCP Node components

The following diagrams shows an overview of an SCP node:



Each SCP node consists of a cluster of servers as follows:

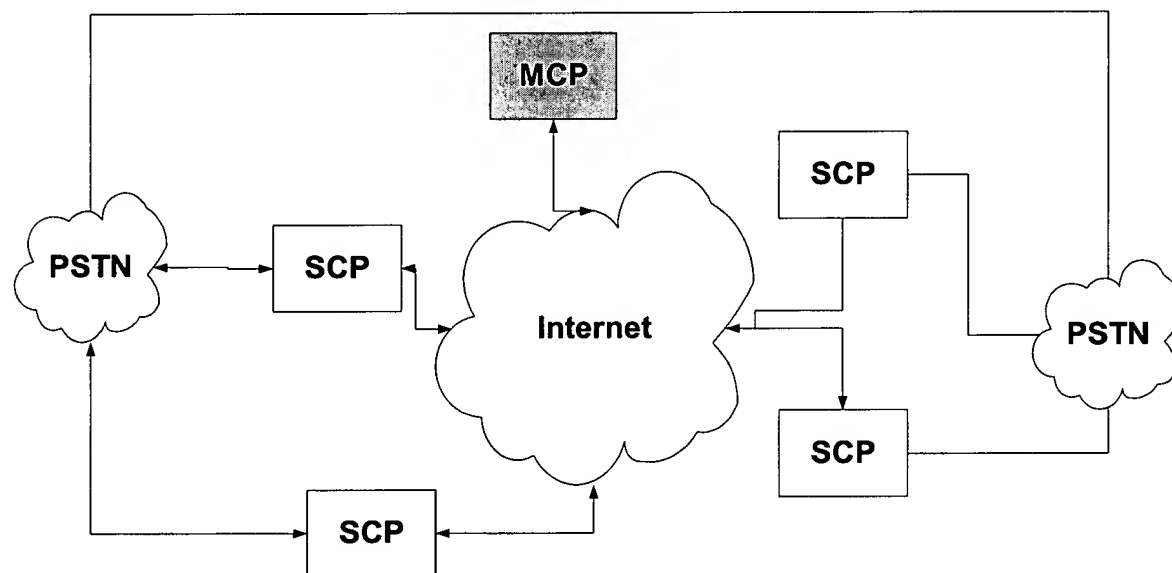
- VPU – Voice Processing Unit:
  - Currently an SCO Unix based server where all telephony processing is being handled. The VPU used dialogic boards to handle voice/fax calls from/to the PSTN.
  - The VPU depends on the DPU for database access and for message store. There can be multiple VPUs in an SCP node to provide additional port and processing capacity if needed.
  - The long term plans are to port the VPU to Linux once dialogic boards are available for the Linux platform.
- DPU – Processing Unit:
  - A Linux based server that handles the unified message store and the various SCP data bases.
  - There can be multiple DPUs in an SCP node to provide scalability.



- CCU – Common Control Unit:
  - The processes that controls the interface to external entities such as another SCP server, Web servers and mail servers.
  - Currently the CCU server resides on the same Linux box where the DPU is hosted.
- Web/IMAP/POP3 Access:
  - The POP3, IMAP and the Apache web reside on the same server as the CCU
  - They are used to provide Internet access to the SCP message store via a Web interface and via an IMAP/POP3 interface.
  - The Web access and the IMAP/POP3 access to the SCP message store is supported via an RPC call library.

## 2.2 SCP Network(Cloud):

An SCP Network consists of a collection of SCP nodes and a single MCP node that are interconnected via the Internet as shown in the following diagram:



The role of the MCP is:

- To store global data that must be shared among the various SCP nodes. In particular the MCP stores the global subscriber attributes that ensure the unique identity of each subscriber throughout the SCP network and it contains a reference to the host SCP node for each subscriber.
- To control the allocation of mail-box access numbers (e.g. phone numbers) for each SCP.
- To propagate / synchronize the global data to all SCP nodes.

The MCP is used only during the process of adding/modifying/deleting mail boxes and it does not participate during actual call processing.

Each SCP node contains the message store for its own set of subscribers and a Web/IMAP/POP3 servers for client access through the Internet. When a web client accesses the <http://www.blue-silicon.com> web site it will then be re-directed to the web server where his mail-box is hosted.

## **3. SCP Development Environment:**

### **3.1 Development Platforms**

- The SCP system currently consists of a Linux server (DPU) and an SCO-Unix server (VPU). SCP programmers should have a good experience and understanding of Linux and SCO since part of the deployment requires setting, customizing and configuring the operating system.

### **3.2 Programming Languages**

- “C” programming – In the SCP code there are approximately 278 ‘C’ source files with about 134,000 lines of code. There are about 1,100 C functions in those files. The ‘C’ functions consists of drivers, database access routines, RPC calls and general low level functions.
- ‘PERF’ – The SCP system uses an interpretive programming language called PERF. There are about 802 PERF files with about 168,000 lines of code. There are about 6,200 PERF functions in the above files. PERF syntax is similar to ‘C’/Pascal and can be learned quickly by ‘C’ programmers. PERF is used primarily to implement application level functions.

### **3.3 Key Technologies used:**

- Dialogic Boards are used on the VPU for PSTN connection. Programming experience with dialogic drivers, state machines, signaling is required to support and enhance the VPU code.
- RPC Programming: RPC is used extensively throughout the system. Experience with RPC and with programming and trouble shooting inter process communication is extremely important for the successful support of the SCP
- Informix Data Base – The SCP uses an embedded Informix data base to maintain subscriber list and other type of data. Experience with SQL programming and Informix Embedded SQL C libraries is required.
- IMAP/POP3/WEB servers are part of the SCP. The integration of those servers with the SCP message store is an important piece of the application. Note that our plans is to replace that integration with the IPlanet Messaging Server.

## **4. An Outsourcing Model:**

Successful implementation of the outsourcing of the SCP maintenance requires the close cooperation of UniCONN Asia. My recommendations are as follows:

- For the next three months have an engineer from the consulting firm work out of the UniCONN Asia offices in Hong Kong. This will allow for quick training and very efficient support over the next three months. This engineer can then be the liaison for any other engineers at the consulting firm offices. Any other arrangement will be extremely inefficient and waste critical time.
- The UniCONN Asia contract should provide for adequate support from Donald and Lai. We will have to evaluate whether we work of the SCP 3.1 baseline or of the SCP 3.0 baseline.
- The work of the consulting firm engineers should be controlled, prioritized by the Blue-Silicon development organization. System testing will be done at the Blue-Silicon offices.
- This arrangement could provide us with engineering resources and bandwidth we need to support the June Launch while at Blue-Silicon we work on the conversion of the CCP & SCP platforms.

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